JUNE 20, 1952

GREAT NORTHERN PLANS
$30 MILLION EXPANSION
. . . Page 11

ELK FALLS STARTS UP
. . . Page 11

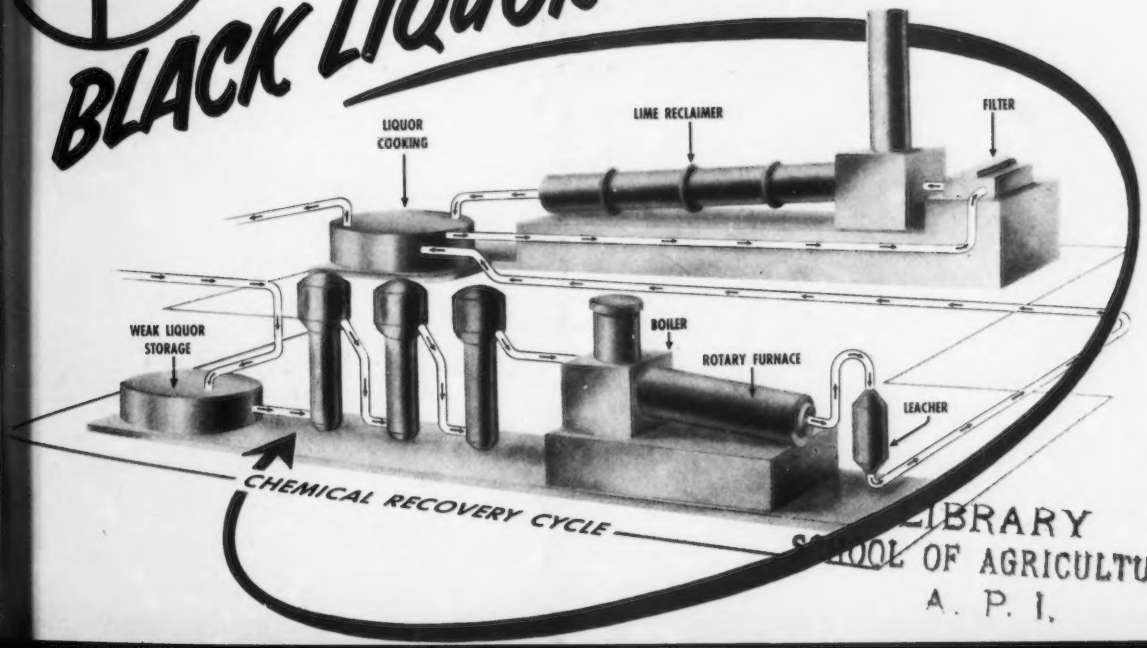
NEW BAGASSE PULPING
PROCESS FOR NEWSPRINT
. . . Page 14

# Paper TRADE JOURNAL

LIBRARY
JUN 27 1952
ALABAMA
POLYTECHNIC INSTITUTE

GB

the symbol for
BLACK LIQUOR EVAPORATORS




LIBRARY
SCHOOL OF AGRICULTURE
A. P. I.

GB

GOSLIN-BIRMINGHAM
MANUFACTURING CO., INC.
BIRMINGHAM, ALABAMA
CHICAGO: F. M. deBeers and Associates, 20 N. Wacker

LODDING DOCTORS

★ ★ Under the waterfall—
Lodding Doctor.

Precision that avoids premature wire changes. First on the machine. First in performance.

LODDING ENGINEERING CORPORATION
WORCESTER, MASSACHUSETTS

REPRESENTED BY
W. E. GREENE CORPORATION • WOOLWORTH BLDG., NEW YORK

# Nalco #71

## PAPER MILL ANTIFOAM

- **CONTROLS** foam and bubble formation over wide pH range—4.0 to 9.5!
- **ELIMINATES** bubble formation on wires.
- **EASY** to mix and feed.
- **NO EFFECT** on other materials in the furnish.
- **ECONOMICAL**—Average cost less than 15¢ PER TON of paper produced.

NALCO 71 not only positively eliminates foam and bubble formation in paper machine systems without affecting the furnish, but it also *stays in the water.* This means that remarkably small dosages of 71 efficiently prevent foam overflows, wadding, uneven caliper and other foam difficulties. Churning of Jordans, action of stock pumps and the flow of stock—the very things that cause foaming in untreated systems—all promote better action of Nalco 71!

Complete information on Nalco 71—and on other Nalco Chemicals for paper manufacturing use will be furnished upon request. Write today for prompt action on a permanent solution for your foaming problems.

**NATIONAL ALUMINATE CORPORATION**
**6221 West 66th Place**
**Chicago 38, Illinois**
*Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario, Canada*

THE Nalco SYSTEM
Serving the Paper Industry through Practical Applied Science

# "Tycol Armitage boosts bearing life... smooths the way for faster, heavier loads"

Of course! Tycol Armitage Bearing Grease "stays put" ... keeps anti-friction bearings running smooth and cool. Its high stability makes it suitable for sealed anti-friction bearings that must last the life of the equipment.

Tycol Armitage possesses exceptional resistance to oxidation.

The dependable lubricating ability of this quality grease lengthens bearing life and cuts down maintenance costs.

Call your nearest Tide Water Associated office for further information.

TYCOL

INDUSTRIAL LUBRICANTS

Boston • Charlotte, N. C. • Pittsburgh
Philadelphia • Chicago • Detroit
Tulsa • Cleveland • San Francisco

TIDE WATER ASSOCIATED OIL COMPANY

17 BATTERY PLACE · NEW YORK 4, N.Y.

**SEND FOR A FREE COPY OF "TIDE WATER ASSOCIATED LUBRICANIA"**

Paper TRADE JOURNAL

VOL. 134 JUNE 20, 1952 No. 25

FEATURES

| | Page |
|---|---|
| Great Northern Gets C/N, Part of $30 Million Expansion | 11 |
| Monadnock Still Operating | 11 |
| Rushmore Shuts Down | 11 |
| Elk Falls Starts Operations | 11 |
| Grace and Sandy Hill Hold Bagasse Conference | 12 |
| Another Bagasse Pulping Process For Newsprint | 14 |
| Start Construction of So. Africa's First Bagasse Mill | 16 |
| Electrostatic Precipitators Play Important Role in Recovery of Paper Chemicals | 21 |
| Processes Available for Production of Pulp from Sugar Bagasse | 24 |
| Condensations of Papers, Australian Technical Conference, 1952 | 32 |

DEPARTMENTS

| | | | |
|---|---|---|---|
| Our Business | 7 | Associations | 22 |
| Trends | 9 | Prices | 30 |
| News of the Week | 11 | Material Prices | 31 |
| Fighting Paper Wanted | 16 | People | 36 |
| Government Gospel | 18 | Financial | 38 |
| What's New in Equipment | 19 | Obituaries | 38 |
| Technical Publications | 20 | Production Ratio | 38 |
| Industrial Section | 21 | ADVERTISERS INDEX | 50 |
| CLASSIFIED ADVERTISING | 40 | | |

PUBLISHED EVERY FRIDAY

LOCKWOOD TRADE JOURNAL CO., INC., 15 West Forty-Seventh Street, New York 36

Phone: PLaza 7-2370

GEORGE E. LOCKWOOD, President and Treasurer
ARTHUR E. GORDON, Vice-President
FREDERICK E. WINKLER, Secretary

HENRY J. PERRY, Editor
R. E. THUEMMES, Managing Editor
E. P. McGINN, Industrial Editor
E. P. NUTTALL, Associate Editor

Entered as Second Class Matter at the post office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 North Crystal St., East Stroudsburg, Pa. Printed in U.S.A. Copyright 1952 by Lockwood Trade Journal Co., Inc. PAPER established Feb. 17, 1899, combined with PAPER TRADE JOURNAL Nov. 16, 1899. PAPER established Sept. 21, 1910, combined with PAPER TRADE JOURNAL February 19, 1926. All rights to the above titles reserved. Contents of PAPER TRADE JOURNAL, including all articles, illustrations, etc., are copyrighted and may not be reprinted except by permission. PAPER TRADE JOURNAL is indexed in Industrial Arts Index and Engineering Index. Also publisher of LOCKWOOD'S Annual DIRECTORY OF THE PAPER AND ALLIED TRADES.

## NEXT WEEK

### SUPERINTENDENTS ISSUE

If you were not one of the individuals lucky enough to attend one of the most outstanding conventions of the American Pulp and Paper Mill Superintendents' Assn. in many years, then the best thing is to read next week's issue.

## REMEMBER THESE DATES

*JUNE 23-25:* Forest Products Research Society, Annual Meeting, Milwaukee, Wis.

*JUNE 23-27:* American Society for Testing Materials, Annual Meeting, 15th Anniversary, Hotel Statler, New York, N. Y.

*SEPT. 9-13:* Seventh National Chemical Exposition, Chicago, Ill.

*SEPT. 18-21:* Northeastern Div., of the American Pulp and Paper Mill Superintendents Assn., Poland Spring House, Poland Spring, Maine.

*SEPT. 26-27:* Pennsylvania-New Jersey-Delaware Div. of American Pulp and Paper Mill Superintendents Assn., Fall Meeting, Galen Hall Hotel, Wernersville, Berks County, Pa.

*OCT. 8-10:* The Southern and Southeastern Divisions of the American Pulp and Paper Mill Superintendents Assn., Joint Meeting, Hotel Roanoke, Roanoke, Va.

*OCT. 11:* Connecticut Valley Div. of American Pulp and Paper Mill Superintendents Assn., Fall Meeting, Berkshire Inn, Great Barrington, Mass.

*OCT. 13-16:* Printing Industry of America, Chase Hotel, St. Louis, Mo.

*NOV. 14-16:* Alkaline Pulping Conference, Technical Assn. of the Pulp and Paper Industry, Battle House, Mobile, Ala.

*NOV. 20-21:* Corrugated Containers Committee of Technical Assn. of Pulp and Paper Industry, Conference, Hotel Schroeder, Milwaukee, Wis.

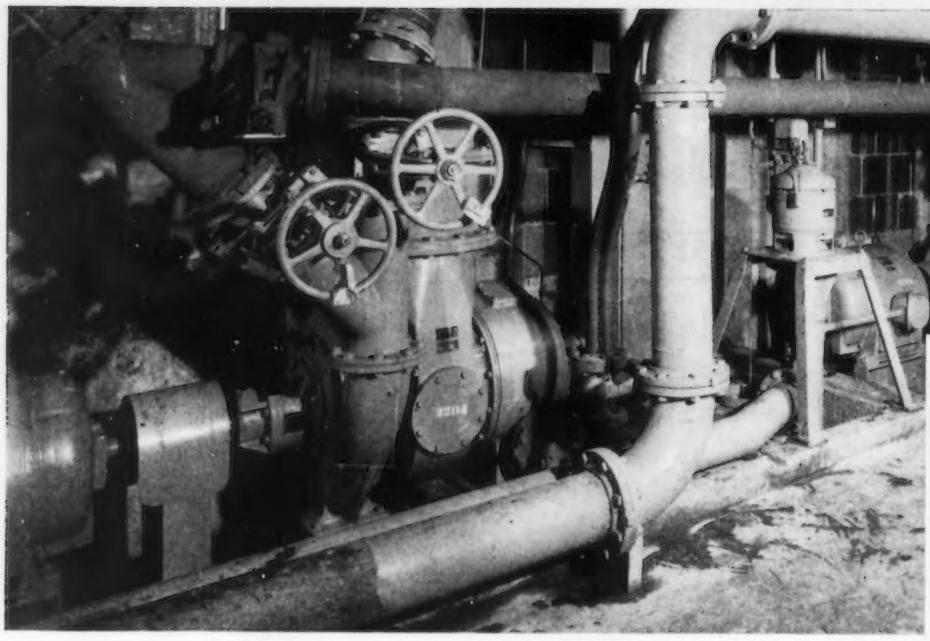
### SUBSCRIPTIONS

Payable in advance—Single Copy 15c—U. S. $5.00 per year—U. S. Possessions $7.00 per year.

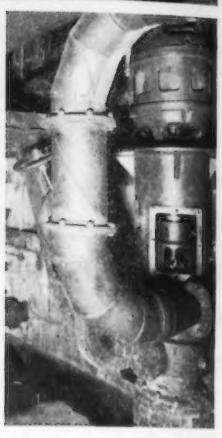
Canada $7.00 per year—Canadian Funds acceptable.

Latin American Countries $15.00 per year.

All Other Countries $20.00 per year.



*Horizontal Agi-flo installation*



*Vertical Agi-flo*

# Proper agitation always pays off

You cannot get proper agitation just by suspending a paddle and "boring holes in the stock." Modern standards require far better agitation than that—agitation that overcomes tendencies for the stock to channel, stratify or collect in corners.

Shartle Class L agitators keep the entire body of stock in circulation—into the suction and discharging at high gallonage to the opposite side of the chest mid-feather, times infinitum.

Shartle Agi-flo®—a combination Class L agitator and centrifugal pump combined on a common shaft with a common motor—provides Class L agitation and since a constant head is maintained, regardless of the stock level in the chest, a predetermined volume is bled off and pumped to the next station in the process.

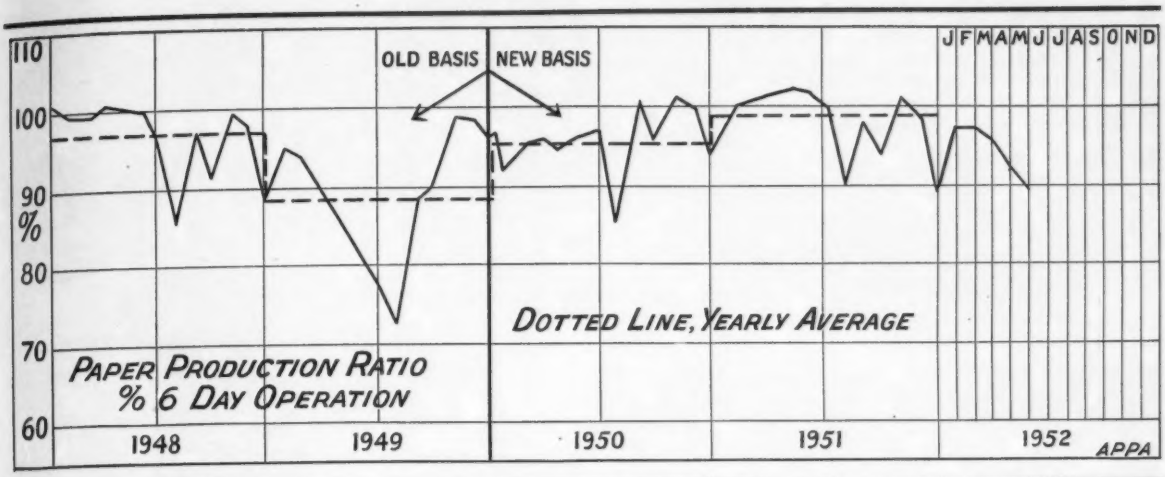
Shartle propeller agitators, standard variable pitch bladed, and special designs, are also available—for locations best suited to their use.

Entrust the engineering of your agitation equipment to Shartle—also the design of your chests. That too is important.

**SHARTLE BROS. MACHINE CO.**

**MIDDLETOWN, OHIO**

DILTS MACHINE WORKS, Fulton, New York • *Divisions of* THE BLACK-CLAWSON CO., Hamilton, Ohio
*Northern Sales Office:* 814 N. Superior St., Appleton, Wisc. • *Southern Sales Office:* 937 Coventry Road, Decatur, Georgia
*Western Sales Office:* Mayer Bldg., Portland, Oregon • *Associate:* THE ALEXANDER FLECK LIMITED, Ottawa, Ontario
*Subsidiary:* B-C INTERNATIONAL LTD., Greener House, 66/68 Haymarket, London, S. W. 1, England




## Brief of Important Figures

| Source | Production | WEEK ENDING June 7, '52 | May 10, '52 | June 9, '51 |
|---|---|---|---|---|
| APPA | Paper Production Percent Capacity[3] | 89.7 | 91.8 | 103.4 |
| | Unbl. Kraft Paper Production Percent | 82.6 | 81.0 | 99.7 |
| NPA | Paperboard Operating Ratio Percent Inch Hours | 75 | 81 | 102 |
| | | **Apr. 1952** | **Mar. 1952x** | **Apr. 1951** |
| APPA | Paper Production* (Except Newsprint and Building Papers) ....Tons | 853,000 | 897,609 | 831,500 |
| | New Orders ....Tons | 797,000 | 852,639 | 857,000 |
| | Unfilled Orders ....Tons | 812,806 | 871,956 | 964,636 |
| | Shipments ....Tons | 844,000 | 882,827 | 824,000 |
| | | **Apr. 1952** | **Mar. 1951** | **Apr. 1951** |
| NPA | Paperboard Production ....Tons | 1,002,866 | 813,744 | 1,006,972 |
| | New Orders ....Tons | 1,049,281 | 844,303 | 956,085 |
| | Unfilled Orders ....Tons | 417,564 | 380,443 | 646,878 |
| | **Our Customers Activities Index[1]** | **Latest Mo.°** | **Previous Mo.°** | **Year Ago°** |
| FRS | Manufactures Total Index | 227 | 228 | 231 |
| | Durable Mfg. Index | 280 | 280 | 275 |
| | Nondurable Mfg. Index | 184 | 186 | 194 |
| | Chemical Products Index | 297 | 298 | 296 |
| | Mfg. Food Products Index | 149 | 149 | 149 |
| | Printing and Publishing Index | 180 | 175 | 179 |
| ODC | Magazine Advg.-Printer's Ink Index | 371 | 369 | 343 |
| | Retail Sales Combined Adjusted Index | 371.8 | 383.5 | 368.3 |
| | Drug Index | 254.3 | 260.8 | 251.8 |
| | General Merchandise Group Index | 384.0 | 407.8 | 393.9 |
| | Grocery and Combination Index | 450.7 | 449.2 | 423.8 |
| | **Prices Index** | | | |
| BLS | Consumers Price Index[1] | 188.0 | 187.9 | 184.5 |
| | Wholesale all Commodities[4] | 112.3 | 112.5 | 116.5 |
| | Wholesale Processed Foods | 109.2 | 109.5 | 112.0 |
| | Commodities other than Farm Products and Foods[4] | 113.9 | 114.2 | 117.3 |
| | Wholesale Pulp, Paper[4] and Allied Products | 117.7 | 118.3 | 120.3 |
| | Purchasing Power of Dollar, Consumers Prices[1] | 53.2 | 53.2 | 54.2 |
| | **General Activity Index** | | | |
| FRS | Mfg. Production-Worker Payroll[4] | 130.9 | 131.1 | 130.0 |
| | Unemployment Compensation Initial Claims (M) | 867 | 890 | 719 |
| | Miscellaneous Carloadings-Thousands of Cars | 1,888 | 1,463 | 1,979 |
| | Electric Output (Million KW hr.) | 38,568 | 36,768 | 36,172 |
| PTJ | Average 32 P & P Common Stocks as of June 14 | $34.59 | $34.15 | $37.77 |

[1] 1935-39 = 100 Unadjusted Index.
[3] New 6-7 day basis.
[4] New Index 1947-1949 = 100.
* For details see APPA Monthly Statistical Summary—April 1952 Estimated Figures.
° Latest Month Available on Request.
x Revised figures.

A wide range of products can be safely shipped in bags reinforced with Fiber • Glass, regardless of the weather. Fiber • Glass is moisture-resistant, has exceptional tensile strength.

# Paper bags that aren't afraid of rain

**Water and moisture have little effect on strength of paper reinforced with L·O·F Fiber·Glass**

Strong fibers of glass between layers of paper in bags multiply their strength and resistance to tearing, and allow them to carry much greater poundage.

There are many uses for L·O·F Fiber·Glass in reinforcing paper. Paper tape reinforced with Fiber·Glass becomes steel-strong; reinforced wrapping paper is rugged enough to wrap heavy steel sheets or rods.

The possibilities for developing new types of laminated Fiber·Glass-reinforced paper products are almost endless. We welcome inquiries about such applications. Perhaps we can help you give new strength and utility to your present products.

Let's talk it over. Call your local L·O·F office (district offices in 24 major cities). Or get in touch today with Libbey·Owens·Ford, Dept. F·G 1362, Nicholas Building, Toledo 3, Ohio.

LIBBEY·OWENS·FORD GLASS COMPANY

FIBER·GLASS DIVISION

L·O·F GLASS · PLASKON · L·O·F FIBER·GLASS

**FIBER·GLASS**

Paper TRADE JOURNAL

# TRENDS

## Optimistic Note Sustained

Difficult as it is to find reasons why men feel better about the business outlook than they did a month ago, the fact is they do. The note of optimism reported last week is found to be sustained.

Said one man of the slackened demand and dwindling backlogs, "We're still earning a good living, and business always does come back sooner or later. I'm thankful it's as good as it is."

Attempts to analyze the brighter spirits bring forth various opinions. Maybe we've adjusted to the easier tempo and like having time to devote to our families, to sports, to cultural pursuits. Or we are thinking of vacations. Perhaps we are counting on this being the last half-mile before a "No Deal" administration takes over.

But whether this new attitude is born of readjustments to the lower level, or of glad acceptance of the day when we can enjoy our work and have some energy left to play a little afterwards; or whether it be made up of confidence in America; we like the new feeling and we're glad to see its rebirth.

True there is acceptance too of a few realities: (1) the boom is over and (2) business is receding with the pendulum's wide back swing to somewhat lower than normal volume (3) due to the tremendous stocks of every commodity which must be resized to the lower consumer demand for hard and soft goods alike.

## Buyers "Nosing" Around the Market

Buyers are said to be nosing around the market again, hinting that a renewal of buying in some commodities is not too far off.

In other fields, however, vanishing order backlogs and light demand, measured against long-term contracts for supplies, pose a problem that is just beginning to be felt.

What to do with all the stuff which was contracted for on a capacity output basis becomes a vexatious and leading problem, now heightened for raw materials supplies where mills have been counting on backlogs to keep rolling. As shipments of these orders are made and no new orders come to replace them, raw stocks are mountainous. And the markets which they represent are now getting the recessive tendencies.

## Wood Pulp Markets Are Soft

Nowhere is this any more true than in wood pulps. Overall market structure is at least bowed, if not bent, by the weight of new supply and unwanted tonnage. Weakness is now showing up all along the line, though bleached grades are generally not weak.

U. S. wood pulp production during April—the latest month for which figures are available—amounted to 1,390,316 tons, compared with 1,449,740 tons in March. Production base for the same months stood at 1,666,054 tons in April and 1,645,488 in March, while consumption in paper and board manufacture was 1,448,923 tons in April and 1,503,918 in March. Consumption of market unbleached sulfite for April is reported to be the lowest for any single month since the war; and for unbleached krafts to be the lowest in any one month save for the low consumption months of May and July of 1949.

Inventories at paper and board mills at the end of April had increased 2 per cent over March to 543,310 tons. Month-end stocks at pulp mills gained close to 15,000 tons.* (See Table 1).

* Source: Bureau of the Census, "Facts for Industry."

## Third-Quarter Pulp Prices Take Adjustive Dip

Third-quarter market pulp prices will be much lower. In a move which was not unexpected to some in the trade, some overseas producers dropped their prices to domestic ceilings.

Bleached sulfite from three major Norwegian mills is announced at $140, on dock, and is reported to be getting favorable acceptance from customers.

Following this move, other prices moved into competitive range, though to press time Canadian mills were believed to be trying to hold the line, at least on unbleached sulfites, news grade, of secondary consideration to their newsprint production.

## Price Indications for Third-Quarter

U. S.—Bleached sulfites will be unchanged from ceiling price; bleached sulfates: $140/145/157.50; unbleached krafts: price unnamed, but known to be weak.

Canadian — Bleached sulfite, $140, varying freight allowances; bleached kraft, $150/175; unbleached kraft, $100, full freight (quotation from one mill only as yet.)

Norwegian—Bleached sulfites, $140, on dock, three mills.

Swedish—Bleached sulfite, $140, unbleached sulfites, $130/135, on dock, (one mill only as yet.) E.P.N.

**Paperboard Production (Tons)***

| | June 7 1952 | May 31 1952 | June 9 1951 |
|---|---|---|---|
| Production | 185,107 | 188,938 | 244,609 |
| New Orders | 244,912 | 200,761 | 283,122 |
| Unfilled Orders | 412,083 | 374,989 | 696,726 |
| % of Activity | 75 | 79 | 102 |

* Source: National Paperboard Assn.

**Table I**

**WOODPULP: U. S. PRODUCTION, CONSUMPTION, INVENTORIES, APRIL, 1952**

(Tons of 2,000 pounds)

| Grade | U. S. Production | | Imports | | Exports | Consumption in paper & bd. manuf. | End of Month Inventories[1] | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Tons | % of Base‡ | Canada | Europe | | | Pulp Mills | Integ. Mills | Partially integ. | Non-integ. |
| Total | 1,390,316 | 82.7 | 81,365 | 9,441 | 24,626 | 1,448,923 | 127,293 | 158,804 | 224,173 | 245,961 |
| Spec. Alpha & Dissolving | 61,229 | 92.9 | 1,185 | n.a. | n.a. | 7,966 | 21,757 | 993 | 707 | 17,549 |
| Sulfite, Total | 206,368 | 83.4 | 39,727 | 4,669 | n.a. | 258,608 | 29,462 | 39,217 | 103,377 | 105,690 |
| Blchd. | | | 13,072 | 1,996 | | 164,449 | 19,051 | 15,089 | 46,545 | 64,499 |
| Semiblchd. | | | | n.a. | | | | | | |
| Unblchd. | | | 26,655 | 1,501 | | 94,159 | 10,411 | 24,128 | 56,832 | 41,191 |
| Sulfate, Total | 715,060 | 84.5 | 28,318 | 4,658 | 9,645 | 752,436 | 28,755 | 80,737 | 80,230 | 96,453 |
| Blchd. | | | 19,195 | 1,792 | | 207,190 | 13,835 | 58,540 | 41,941 | 39,141 |
| Semiblchd. | | | 414 | n.a. | | 24,473 | 408 | } | } | 5,052 |
| Unblchd. | | | 8,709 | 1,330 | | 520,773 | 14,512 | } 22,197 | } 38,289 | 52,260 |
| Soda | 37,795 | 68.6 | 2,610 | | | 39,093 | 2,321 | 2,621 | 5,321 | 7,751 |
| Groundwood | 206,026 | 80.4 | 9,142 | 25 | | 225,314 | 38,013 | 28,903 | 28,267 | 15,733 |
| All Others | 151,925 | 77.7 | n.a. | | | 165,506 | n.a. | 5,933 | 6,271 | 2,785 |

Based on Bureau of Census and APPA reports.

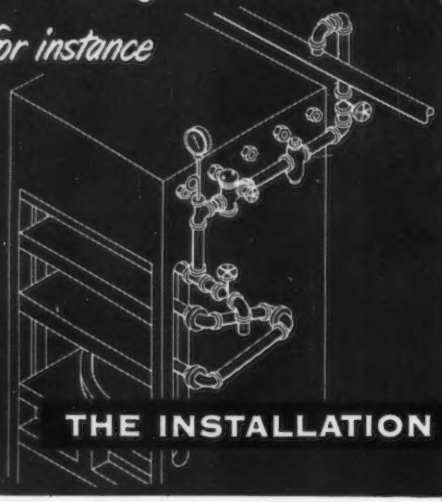
* Revised. [1] Preliminary. n.a. Not available.

‡ Production base for the month is a calculated figure based on the highest average daily production of each mill in any 3 months of census record, multiplied by the number of working days in the month covered by this report. Sundays and 3 equal holidays are not considered working days.

# Will Your Pressure Regulators Last 25 Years?

...on Molding Press Service

for instance



THE INSTALLATION

Crane Brass Pressure Regulators on steam lines to rubber molding presses; Dryden Rubber Division, Sheller Mfg. Corp., Chicago. 225 units in service.

## VALVE SERVICE RATINGS

| | |
|---|---|
| FEATURES: | Equally good on steam or air |
| SUITABILITY: | Steady outlet pressure - No drift |
| MAINTENANCE COST: | Routine servicing only |
| SERVICE LIFE: | Many installed more than 25 years — Still O.K. |
| OPERATING RESULTS: | Fully automatic steam control at lowest cost |
| PRICE: | Good Buy - has no equal |
| AVAILABILITY: | Stock item in Crane Line |

## THE HISTORY

Steam generated at 130 psi is reduced through individual regulators on molding presses. Pressure used at machines is 60 to 100 psi depending on work. Features of regulator service needed most are: (1) non-fluctuating outlet pressure automatically maintained within close regulation; (2) easy adjustment by press operator to specified pressure for given work.

More than 25 years ago the plant standardized on Crane Regulators, a total of 225 being in use today. Many are the original installations, still delivering desired outlet pressure. Records for all regulators, regardless of age, show no maintenance cost other than prescribed simple routine servicing. On old models of the Crane 960 regulator, after prolonged service, this includes occasional regrinding of seats.

## THE VALVE

Crane No. 960 Brass Pressure Regulators reduce steam or air pressures up to 250 psi, to within 80% of inlet pressure. Factory pre-set to operate within any of 4 ranges from 1 to 200 psi, with easily selected service pressure within set range. Precision made; fully automatic; highly dependable, even under reasonable fluctuation of inlet pressure. All wearing parts renewable. See your Crane Catalog or Crane Representative for full data.

*The Complete Crane Line Meets All Valve Needs. That's Why—*

**More Crane Valves Are Used Than Any Other Make!**

# CRANE VALVES

CRANE CO., *General Offices:* 836 S. Michigan Ave., Chicago 5, Illinois

*Branches and Wholesalers Serving All Industrial Areas*

***VALVES • FITTINGS • PIPE • PLUMBING • HEATING***

## Great Northern Gets C/N for Part of $30 Million Expansion

Great Northern Paper has been granted certificate of necessity permitting fast tax write-off for part of cost of $30 million newsprint expansion at Millinocket, Me. The company will be allowed to write off 45 per cent cost for tax purposes within five years. New facilities are expected to produce 124,000 tons of newsprint and 141,000 tons of woodpulp annually.

## St. Regis Granted Allotments

NPA on June 11th announced approval of two grants for the St. Regis Paper Co.; $2,466,878 of materials to produce paper bags at Pensacola, Fla. and $6,750,000 to produce kraft paper at Eastport, Fla.

## Monadnock Still Operating

Monadnock Paper Mills is not shutting down as has been erroneously reported elsewhere, and has no plans to do so.

## Ulster Co. Starts Yankee Fourdrinier

Ulster County Paper Mill, Saugerties, N. Y., has started to operate the Yankee Fourdrinier machine, making facial tissue.

## American Tissue May Change Type of Paper Made

Experimental work is in progress at the Pearl City and Stony Brook plants of the American Tissue Mills, with the prospect of a changeover from production of facial tissues to specialty papers at the two South Hadley, Mass. plants.

Benjamin F. Perkins, Jr., vice-president of the firm, said that the experiments are in the early stages and that there is no indication yet as to what particular type of paper the two mills may produce.

## N. B. Forests Sprayed By Airplanes

A fleet of 19 aircraft from Yakima, Wash., arrived in New Brunswick to spray an extensive area of valuable timberland in northern areas of N. B. against the spruce budworm which has infected the regions in that part of Canada. An airport has been constructed by the New Brunswick Government deep in the hinterland to service the spraying fleet.

## Rushmore Shuts Down

GOUVERNEUR, N. Y.—Plants of the Rushmore Paper Mill at Natural Dam and at Gouverneur have been virtually shut down, the lay-off of workers having been forced by "erratic business conditions," according to company officials.

George W. Schildge, general manager for the Rushmore firm, asserted that the lay-off is "temporary" although he does not know when the plants will resume full operations.

The Natural Dam plant is completely closed. The finishing room of the Gouverneur plant is the only department working.

## $20,000 Upson Fire

LOCKPORT, N. Y.—An estimated $20,000 of paper pulp stock was ruined June 9 in the warehouse of the Upson Co. when fire broke out in a storage bay containing 500 tons of pulp.

Henry W. Schmidt, vice-president in charge of manufacturing, said the origin had not been determined but "it might have been spontaneous combustion."

# Elk Falls Starts Operations

### First wholly newsprint mill to be built in British Columbia in 35 years and first in Canada in 15 years.

The $21 million newsprint mill of the Elk Falls Co., Ltd. went into operation on June 10. Start-up of the 2000-feet-per-minute paper machine, one of the largest in the world, signalled completion of the biggest project of its type on the Continent, in record time. Paper is spinning off the high-speed paper machine well ahead of the original target date for actual production.

The Elk Falls Co. was incorporated on September 8, 1950; camp construction started on December 6, 1950; excavation was begun on December 7, 1950; mill construction started, (warehouse, shop and office), on April 10, 1951 and construction of the concrete main building begun on May 22, 1951. The newsprint mill is the first unit of an eventual $40 million development in the Duncan Bay area by the Elk Falls Co. It is designed for production of 320 tons of newsprint paper per day.

While the preliminary wood requirements are being met from salvage operations and from small-diameter wood from allied company operations, timber from the Duncan Bay Forest Management License later will be utilized in line with objectives of the B. C. Forest Act.

The plant is geared throughout for the complete utilization of raw materials and comprises a wood mill, equipped with a log-haul, cut-off saw, hydraulic barker, slasher saws, and steam splitter.

The wood blocks being produced are conveyor-lifted to a water flume which carries them to the groundwood mill, which is fitted out with six Great Northern Waterous low-magazine grinders, driven by three 5500 h.p. grinder motors, and screens, thickeners and washers.

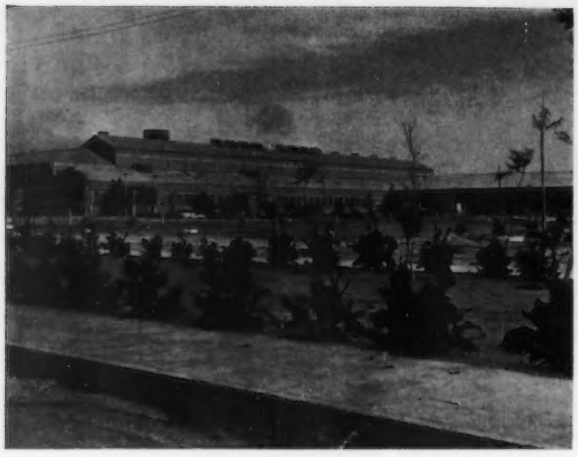
Continuous roll finishing is being done, and the paper is being stored in a huge warehouse designed to handle 5000 tons. When an inventory has been built up, the stock will be transferred to a deepsea dock for shipment to the markets of the world.

The Elk Falls Co. represents a 50-50 partnership between Canadian Western Lumber Co., Ltd., and Pacific Mills Ltd. In its 40 year history, Canadian Western has become one of the largest lumber mill operators in the Commonwealth, and one of the major timber holders and integrated forest products manufacturers on the Pacific Coast. Pacific Mills Ltd., also a large timber holder in B. C. and a major pulp and paper producer, was incorporated as a B. C. company in 1915, with head offices in Vancouver. The company's main paper mills are located at Ocean Falls, some 325 miles north of Vancouver by water.

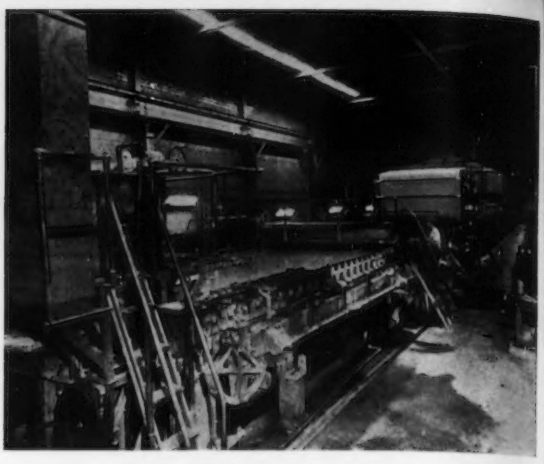
Operated in Vancouver are the Vancouver Converting Plant, which produces household paper commodities, and Canadian Boxes Ltd., a fibreboard shipping container factory.

Officers of the Elk Falls organization are: H. J. Mackin, president; Paul E. Cooper, and R. J. Filberg, vice-presidents; J. A. Young, treasurer; and E. B. Bull, secretary.

Official opening of the plant is scheduled for September 15.



Paramonga Paper Mill—Subsidiary of W. R. Grace & Co.



One of the Many Paper Machines Making Bagasse Paper

# Grace and Sandy Hill Hold Bagasse News Unprofitable

W. R. Grace Co., owners and operators of the bagasse pulp and paper mill at Paramonga, Peru, held a conference at the Savoy Plaza, New York, on June 10, where they outlined the commercial paper making process, they use, for making bagasse papers. The Paramonga mill is currently producing about 20,000 tons annually of woodpulp and bagasse papers. The grades vary from air mail lightweight bonds to book, multiwall sack and container boards in qualities and prices competitive in the Peruvian market.

Varying percentages of bagasse are used with woodpulp, however, many grades such as .009 corrugating and printing papers are 100 percent bagasse.

Considerable interest was aroused on the subject of newsprint from bagasse. W. R. Grace made about 900 tons of this grade in 1950 as a service to the Peruvian press, at competitive prices in Peru, however, they frankly stated that the profit margin was not attractive.

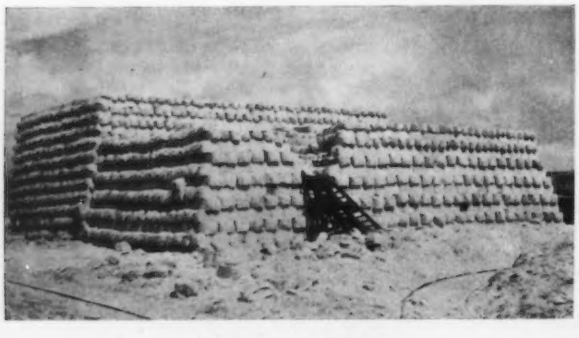
Based on their experience, and adjusted for high speed newsprint operations, they believe that the manufacturing cost of bagasse newsprint would be $90 to $100 per ton in Southern United States. To this would have to be added transportation and profit.

From the facts developed the amount of bagasse available in the United States would produce a potential 200,000 to 300,000 tons per year of newsprint. It would be vital to any bagasse pulp and paper operation to control its bagasse supply, through ownership of the plantation and sugar mill.

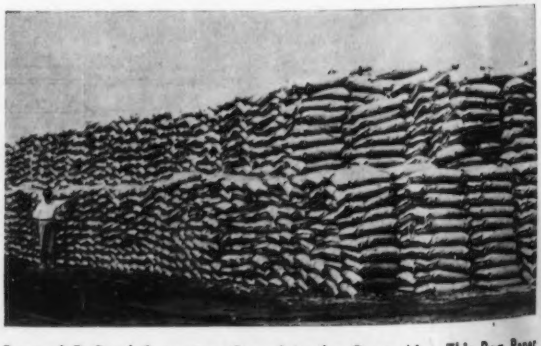
W. R. Grace Co. and Sandy Hill Brass and Iron Works stressed that they did not have any potential or secret processes for sale. Grace has the know-how and experience in producing commercial paper to fill the economic requirements of a country at a profit and Sandy Hill had the experience and ability to build the standard pulp and paper equipment necessary. This experience and know-how is available for a modest one-time fee.

Bagasse is baled for drying. Bagasse is the fibrous residue of sugar cane after the sugar content has been removed. Its commercial use in the manufacture of paper dates from 1939 when the Paramonga Paper Mill, a subsidiary of W. R. Grace & Co., began operations at Hacienda Paramonga, 14,000-acre sugar estate on the north coast of Peru. Throughout the past twelve years the Mill has constantly increased production and at the same time successfully experimented in the manufacture of many different types of paper products.

It will speed the reply to your inquiry to mention Paper Trade Journal.



Baled Bagasse Storage



Bags of Refined Sugar are Stored in the Open Air. This Bag Paper has a High Bagasse Content.

What more need be said as to their ability to prove that they are a necessary and *highly productive and profitable* paper machine accessory

**BIRD MACHINE COMPANY**

SOUTH WALPOLE • MASSACHUSETTS

# New Bagasse Pulping Process Uses Whole Cane

A new process by which newsprint can be produced from whole sugar cane bagasse has been announced by the Valite Corp. of New Orleans and Lockport, La. Engineering reports indicate the feasability of industrial production.

No announcement regarding specific plans for the manufacturing of the bagasse newsprint and bleached paper products is available for release at present. But samples of the fine finish of newsprint-type white paper have been distributed to several Louisiana sugar belt newspapers for printing tests on various types of presses used in the area.

The paper contains 100 percent whole bagasse, "including all pith and it is notable for total absence of clay filler." Under the Valite process book, bond, coated and other types of white paper and cellulose products can also be made from pith containing whole bagasse.

The making of newsprint from bagasse is the result of twelve years of intensive investigation and laboratory tests from an idea born in New Orleans in 1936 to John W. Jay and his partners of Valentine Sugars, Inc., an affiliate of Valite.

Valentine Sugars Inc. became the first licensee of public service patents developed for bagasse by government research at Madison, Wis., and Ames, Iowa. One of the government scientists was T. R. McElhinney, who later became technical director of the newly created Valite division of Valentine.

Valite never operated under the license as Mr. McElhinney deveioped new and improved processes at Lockport for industrially valuable semithermotesting plastic resins. Valite took out the first of its own United States and foreign patents on the new resin produce. Researrh into bagasse paper possibilities resulted from Valite's use of the crushed cane residue as a filler for its bagasse resins in the production of plastic molding compounds.

Unbleached pulp for corrugating paper and similar products became a new Valite research project. Pulping processes were developed which gave high yields of pulp per ton of bagasse. Later, methods were devised to extend the basic pulping economies into the bleached pulp and white paper field.

## McLaurin Opens Louisiana Plant

McLaurin-Jones Co., Brookfield, Mass., recently opened its new, ultra-modern paper processing plant at Homer, La. John McLaurin, president of the firm, officiated at the ribbon-cutting ceremony which was attended by company officers and representatives of the local Chamber of Commerce.

The new Homer, La., mill, which will be the firm's primary southern producer of Ordnance Wrap and Polyethylene coated paper, will also manufacture a complete line of gummed sealing tapes. Construction of the plant allows for installation of equipment to produce both flat and gummed coated papers.

The machinery has been set up in the plant to give a straight flow operation in all paper processing. This assures ideal physical conditions for the manufacture of laminated and coated papers, plant engineers point out. A private railroad spur and truck-level loading docks have also been installed to facilitate the uninterrupted flow of finished products to both truck and rail terminals.

Homer was chosen as the site for the plant because of its central location with reference to the territory to be served. Proximity of raw material sources also played an important role in the selection. By being close to the source of raw material supply, the firm will eliminate long-haul freight charges.

## United Board Back in N.Y.C.

Official opening in New York of the home office of the United Board & Carton Corp., was set for June 16. The company just moved into a suite at 2 Park Ave. The company's home office is re-located after being in Syracuse, N. Y. for three and a half years. A principal office is being maintained, however, in Syracuse.

## Olin Forms Forest Products Division

Olin Industries, Inc., has announced formation of the forest products division with headquarters in Shreveport, La. and the appointment of John W. Hanes as vice-president for Southern operations with responsibility for administering the new division, the Ecusta Paper Division and the Olin Cellophane Division. Mr. Hanes is financial vice-president and a director of Olin.

F. T. Whitehead, former president of Frost Lumber Industries, Inc., which was merged into Olin last January, was named resident director. He will assist Mr. Hanes in administering the forest products division and cooperate with the general manager.

Robert H. Evans, formerly executive assistant to Mr. Olin was appointed general manager of the new division and has transferred his office to the Commercial Building, Shreveport, La.

A.P.W.

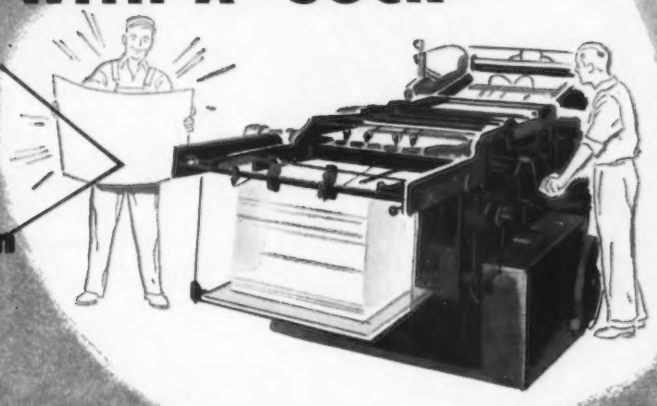
ONLIWON

INDUSTRIAL
TOWELS
TISSUE

John McLaurin, president, cuts ribbon opening new plant in Homer, La. John M. McLaurin (center) General Plant Manager and Secretary and Peter McLaurin, (left) Plant Manager of the parent firm in Scotland look on.

# FOR STOCK WITH A "SOCK"

**high gloss ... low ink penetration**



*Size with*

# Methocel

When a printer orders stock with a "sock" he wants a sheet that will have high gloss and a minimum of ink penetration. Paper and paperboard treated with a light sizing of Methocel (Dow methylcellulose) can fill this order to give him a sheet with plenty of "sparkle."

Light sizings of Methocel are effective in resisting the penetration of varnishes, lacquers and waxes. Reduction of strike-through on waxed boards with Methocel offers a definite advantage in maintaining brightness as well as a reduction in wax consumption.

Methocel also serves as an effective parting agent in the manufacture of contact laminates, and as a grease-proof coating unaffected by aging or temperature.

It will pay you to investigate powdered Methocel for the advantages it can offer for your products.

**THE DOW CHEMICAL COMPANY**
**MIDLAND, MICHIGAN**

*Did you get your* **Experimental Sample?**

The Dow Chemical Company
Department ME-16 • Midland, Michigan

Please send free sample of Methocel.
Check viscosity desired:

☐ 15 ☐ 25 ☐ 100 ☐ 400 ☐ 1500 ☐ 4000 CPS.

NAME _____ TITLE _____

FIRM _____

ADDRESS _____

CITY _____ STATE _____

DOW

## 1951 INJURY RATES BY INDUSTRY *

| | Frequency Rate | % Change from 1950 |
|---|---|---|
| | Disabling injuries per 1,000,000 man-hours | |
| Communications | 1.79 | — 13 |
| Electrical Equipment | 4.04 | — 6 |
| Cement | 4.22 | — 13 |
| Automobile | 4.49 | — 6 |
| Steel | 4.50 | — 3 |
| Shipbuilding | 4.81 | — 31 |
| Glass | 5.40 | — 27 |
| Aircraft Manufacturing | 5.45 | + 31 |
| Chemical | 5.48 | — 6 |
| Tobacco | 5.63 | — 2 |
| Rubber | 5.91 | — 16 |
| Misc. Manufacturing | 6.25 | 0 |
| Textile | 6.89 | — 11 |
| Sheet Metal | 6.92 | — 19 |
| Wholesale & Retail Trade | 7.89 | — 13 |
| Service | 8.45 | — 2 |
| ALL INDUSTRIES | 9.06 | — 3 |
| Storage & Warehousing | 9.07 | — 9 |
| Machinery | 9.09 | + 5 |
| Printing & Publishing | 9.12 | + 33 |
| Railroad Equipment | 10.06 | + 75 |
| Petroleum | 10.50 | + 4 |
| Non-Ferrous Metal & Prod. | 10.84 | — 21 |
| Meat Packing | 10.85 | — 4 |
| Pulp & Paper | 10.90 | — 8 |
| Electric Utilities | 11.06 | — 8 |
| Iron & Steel Products | 12.09 | + 1 |

| | Severity Rate | % Change from 1950 |
|---|---|---|
| | Time charges (in days) per 1,000 man-hours | |
| Communications | .09 | — 25 |
| Tobacco | .15 | — 35 |
| Wholesale & Retail Trade | .19 | — 50 |
| Service | .27 | + 42 |
| Misc. Manufacturing | .32 | — 3 |
| Rubber | .36 | — 49 |
| Electrical Equipment | .37 | 0 |
| Printing & Publishing | .45 | + 80 |
| Automobile | .46 | — 8 |
| Textile | .47 | — 23 |
| Meat Packing | .47 | — 13 |
| Air Transport | .58 | — 50 |
| Machinery | .58 | + 2 |
| Aircraft Manufacturing | .63 | + 3 |
| Glass | .67 | + 49 |
| Sheet Metal | .67 | — 7 |
| Shipbuilding | .75 | — 18 |
| Transit | .84 | — 3 |
| Chemical | .85 | + 12 |
| Iron & Steel Products | .90 | + 11 |
| ALL INDUSTRIES | .97 | + 3 |
| Pulp & Paper | .97 | — 8 |
| Food | 1.00 | + 15 |
| Wood Products | 1.03 | + 17 |
| Gas Utilities | 1.04 | + 32 |
| Leather | 1.08 | +116 |
| Steel | 1.16 | — 10 |

* National Safety Council.

## Schedules Vacation Closing

Madawaska paper mill of Fraser Paper, Ltd., will be closed for vacation from June 26 to July 6.

## Start Construction of So. Africa's First Bagasse Mill

Building has started on South Africa's first plant for the manufacture of box type cardboard from bagasse.

The plant is being built at Empangeni, near Felixton, Zululand, 120 miles north of Durban and is owned by the Ngoye Paper Mills (Pty) Limited. The factory buildings should be finished by June and the machinery imported as well as erected by January, 1953. Full production of 20 tons a day is expected by the end of next March.

## Two Men Are Off

Nothing leaves us colder than a mass of accident statistics. We are sure the same is true with a great many other people.

At rather frequent intervals all of us are exposed to figures under titles of Frequency Rate—Severity Rate. To most of us these are just the milestones by which professional safety men measure their success or failures.

We, more common mortals may casually look to see if the rates have gone up, or down or probably pass quickly by, with a puzzled "so what" attitude.

But, what does all this mean? Just this:

**For each 50 men working 40 hours,** or one week, **two of them** will be **off the job about one day per week** because they have been hurt. This is the severity of our injuries. This is the average of the pulp and paper industry in 1951, and also the average of "all industry."

**Can we take pride in being just average.**

**I think and hope not.** Many other industries just as complex with just as hazardous operations have better records.

Henry J. Percy

## Stevens & Thompson to Negotiate with AFL

GREENWICH, N. Y.—A possible break in the two and a half months old strike at the Stevens and Thompson Paper Co. plant in Greenwich looms as the result of a citizen-sponsored meeting at Schuylerville on the evening of June 9. It was reported that 184 of the mill's employes have petitioned the American Federation of Labor to represent them in negotiations with the company.

Approximately 300 employes have been out of work since early April when District 50, United Mine Workers, which won the collective bargaining election last December, went on strike. The company has refused to reopen negotiations with the United Mine Workers.

Although a bargaining election can be held only once a year, the law also states that a company is free to bargain with any union that represents a majority of its employes.

Signatures on the petition at Monday night's meeting were checked against the signatures on the company's payroll to assure their validity. Another meeting of the American Federation of Labor is scheduled soon.

Stevens and Thompson officials said the plant probably will not be reopened until some type of working agreement is reached with the new union.

## Fighting Paper Wanted

Invitations for bids have been issued by the New York Quartermaster Procurement Agency, 111 E. 16th street, New York 3, N. Y., on QM-30-280-52-1906, covering Barrier, waterproof, 200 yard roll, 14,795 rolls. Bids will be opened June 18, 1952, at 10:00 a.m. (EDST) at the New York office. This procurement is for the U. S. Army.

QM-30-280-52-1914, covering Wadding, absorbent and non-absorbent, 33,396 rolls. Bids will be opened June 19, 1952, at 11:00 a.m. (EDST) at the New York office. This procurement is for the U. S. Army.

QM-30-280-52-1897, covering Paper, teletype, roll form, various, 2,175,490 rolls. Bids will be opened June 17, 1952, at 11:00 a.m. (EDST) at the New York office. This procurement is for the U. S. Army.

QM-30-280-52-1918, covering Paper, Mimeograph, Chemical Wood, Sub 20, 110,730 reams. Bids will be opened July 14, 1952 at 2:00 P.M. (EDST) at the New York Office. This procurement is for the U. S. Navy.

QM-30-280-52-1920, covering Envelope, Packing List, Waterproof, Printed, Asphalt, Duplex, Kraft Paper, 1,273,600 each. Bids will be opened July 15, 1952 at 2:00 P.M. (EDST) at the New York Office. This procurement is for the U. S. Navy.

## Army Requests for Proposals

Requests for proposals have been issued by the New York Quartermaster Procurement Agency, 111 E. 16th street, New York 3, N. Y., on QM-30-280-52-NEG-198, covering Paper, map, high wet strength, white, lithographic finish, 11,046 reams. Proposals will be received until June 16, 1952, at 11:00 a.m. (EDST) at the New York office. This procurement is for the U. S. Air Force.

## Rice Barton Employees Receive Service Awards

The Annual Dinner Meeting of the Rice Barton 1837 Club, whose members are those employees of the corporation who have ten or more years of service, was held in the ballroom of the Hotel Sheraton, Worcester, Mass., June 4, 1952.

Gold watches were presented to Pietro Zona, Elson Stanhope, Herman A. Smith, Stanley Bondar and Patrick F. Droney—each of whom have completed thirty years as employees of Rice Barton.

Arthur Houle and Patrick O'Leary received twenty year emblems.

Ten year year emblems were presented to thirty-seven new members of the 1837 Club.

In the past three years, thirty-eight employees have been presented with watches for thirty years or more service; sixty-five employees have been presented with twenty year emblems; and, one hundred and twenty-eight employees have been presented with ten year emblems.

THE MEAD SALES COMPANY
230 PARK AVENUE, NEW YORK 17, N. Y.
20 NORTH WACKER DRIVE, CHICAGO 6, ILL.

MEAD
pulp

DISTRIBUTORS OF WOOD PULP
BLEACHED AND UNBLEACHED
CHEMICAL AND MECHANICAL WOOD PULP

**Long before radio, Paul Bunyan invented a dinner horn whose sound went clear around the world until the final reverberations knocked his hat off.**

*A reproduction of this incident from the fabulous life of Paul Bunyan—the sixty-fourth of a series—will be sent on request. It will contain no advertising.*

# GOVERNMENT GOSPEL

### Wholesale Paper Sales Drop

WASHINGTON, D. C.—Paper sales at wholesale registered a drop of 11 percent in the first four months this year from the level of a year earlier, in Bureau of Census returns from 64 reporting firms.

April sales showed no change from March, but were six percent below those of the previous April. Inventories were up 15 percent from a year earlier, and for April were 2 percent higher than in March.

Reported dollar sales of the group totaled $9,398,000.

For various regions, sales for four months of 1952, April compared with March, 1952, and with April, 1951, were respectively:

New England—9, 6 and 8 percent;

Middle Atlantic—9, 6 and 6 percent, below the comparable periods;

South Atlantic—off 13 percent, up 8 and off 4 percent;

Pacific—off 9, up 5 and off 5 percent;

East North Central—down 13, up 2 and off 6 percent.

### Remove Woodpulp from Critical List

WASHINGTON, D. C.—Woodpulp has been removed from the NPA list of critically short items, in a revision of its Designation 1.

Cellophane was added to the list, after a period of temporary easy supply.

### Bureau of Mines Explores Sodium Sulfate Sources

Deposits of hydrous sodium sulfate (Glauber salt) estimated at 30,439,000 tons, in North Dakota and eastern Montana lakes, are described in a Bureau of Mines report released by the Department of the Interior.

Of the total amount, 23,849,000 tons are in permanent beds; 421,000 tons are in brines; 2,450,500 tons occur as intermittent crystals; and the remaining 3,718,000 tons are in the crusts and muds.

The Bureau's investigations, which were undertaken in the study of natural resources in the Missouri River Basin Development Program were to some extent preliminary, and somewhat supplementary, to investigations of the Federal Emergency Relief Administration, the University of North Dakota, and the North Dakota Geological Survey.

The work was done primarily to determine the reserves in those deposits already sampled and to obtain a fairly accurate preliminary estimate of the total reserves that might be affected by the proposed waterways and reservoirs in this section of the Missouri River Basin.

The report also says that since interest had been shown by private investors in a sodium sulfate industry in North Dakota, the additional reserves discovered by the Bureau may stimulate further interest and may result in the development of a profitable industry.

### CMP Allotments for Pulp and Paper Expansion

WASHINGTON, D. C.—A total of 35 new projects for pulp and paper expansion, costing $132,049,915, received third quarter allotments of controlled construction materials, the NPA reported last week.

This raised to 74, the total of all pulp and paper, paperboard projects given third quarter help with CMP materials.

A total of 20 container and packaging expansion projects, costing $26,-947,576 received third quarter CMP construction help, of which 13 were listed as new projects.

### Details of Pulp Authorization for Germany

WASHINGTON, D. C.—Details of the recent MSA procurement authorization for two million dollars worth of United States and Cadadian pulp for Germany, have been released by the agency's Office of Small Business.

The purchase program will include: sulfite and sulfite pulp from the U. S., $700,000; dissolving pulp, from the U. S., $600,000; sulfite and sulfite pulp from Canada, $300,000; dissolving pulp from Canada, $400,000.

American suppliers were advised to immediately notify their clients or sales representatives in West Germany that this MSA financing had been approved. Firms without clients or trade representatives in West Germany will be shown the OIT world trade lists for names of importers.

### Authorize 38c Ceiling for Polyvinyl Chloride Resin

Polyvinyl chloride resin producers were authorized to raise their ceilings to 38 cents a pound wherever they are now below this level, in an OPS action last week. The action amounts to an in-line adjustment for the one producer who did not take the 2 cents a pound increase authorized in December, 1950.

### Insignificance No Excuse for OPS Violation

The attention of industry has been called to a U. S. District Court decision which holds, in substance, that a business firm cannot wilfully violate an OPS regulation merely because the firm disagrees with the procedure prescribed by the order. The court pointed out that the Defense Production Act provides a method whereby control orders may be protested to the agency and reviewed.

The decision in U. S. vs. A. P. Seligman, Inc., given by Judge Edward Weinfeld of the U. S. District Court in the Southern District of New York, said,

"The Defense Production Act of 1950 provides a method whereby all regulations or orders concerning price controls may be protested and reviewed." Judge Weinfeld noted in his opinion, "Any objection to the fairness of the regulation should be made in accordance with the statutory scheme. So long as the regulation is in effect the defendant is bound to comply with its requirement.

"The fact that the OPS is considering the possibility of amendment does not sanction violation," he said.

In noting that the defendant conceded violation in its method of cutting veal but contended it was insignificant, Judge Weinfeld wrote: "It is not the role of the Court to assess the degree of violation. Whether trivial or not, as compared to other sections of the regulation, the defendant's failure to observe its requirement is a violation."

He also ruled that since the Defense Production Act set up means for protest and review of price controls, "the reasonableness or wisdom of the regulation is not to be determined by this court."

The court granted the preliminary injunction to restrain the firm from violating the OPS regulation after noting that the defendant admitted violations and gave no indication that it would desist.

### Increased Canadian Shipments to Great Britain

OTTAWA — Imports of paper-making materials into the United Kingdom from Canada advanced sharply in value to 14.4 million pounds sterling during 1951 as compared with only 4.3 million in 1950 and increased to 3.4 million pounds sterling for such imports from United States during 1951 as against merely 600,000 pounds sterling in 1950, according to official sources here.

In addition, imports into the United Kingdom from Canada of paper, cardboard, etc., advanced to 4.6 million pounds sterling in 1951 against only 1 million in 1950 and from United States rose to 6.3 million pounds sterling against 1.3 million in 1950.

Exports of paper, cardboard, etc., from United Kingdom to Canada rose to 700,000 pounds sterling in 1951 as compared with 500,000 in 1950 and totalled 1.5 million pounds sterling in 1951 to the United States as against 1.1 million in 1950.

### Canada Counts Converters

OTTAWA—At last count Canada had 177 plants manufacturing paper boxes and bags, Canadian Government reports.

### Canada's Newspaper Costs Increase

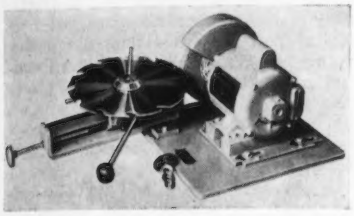
Newspaper costs increased 4.7 percent between March and April, Canadian Government reports.

# What's New in Equipment
## Supplies and Materials

### Circular Saw Sharpener

Known as Easy Cut, and said to be the first American made machine of its kind, the new cam-actuated circular saw sharpener is being introduced by the Hanchett Manufacturing Co., Big Rapids, Mich., and Portland, Ore.

Designed for wide-tooth spaced saws (safety type), the balanced sharpener accurately generates the correct tooth shape with uniform, sharp, clean saw teeth, it is stated.



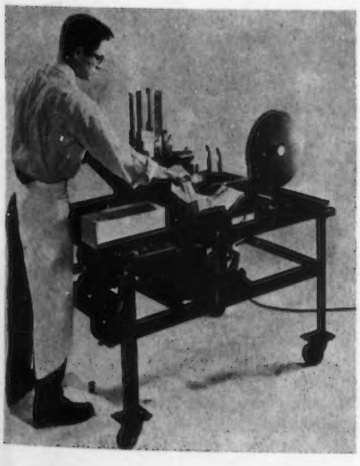
Capacity for saws is from 6″ to 24″ in diameter, special capacitor motor is ½ hp. Feed finger is spring-actuated, and adjustment for saw hook is provided from 0° to 30°. Saw bushings in sizes from ¼″ to 2″ diameter are included together with the Red Anchor grinding wheel and wheel guard. Unit also performs efficiently as a hand gummer. Announcement Bulletin No. EC-34 available.

### Automatic Envelope Counter

A machine that takes up to 30,000 loose envelopes or cards in an hour and stacks, squares, counts and bands them in groups of 12 or 25 is being marketed. Originally developed by Berlin & Jones, Inc., 601 West 26th St., New York 1, N. Y. to serve the firm's own high-volume envelope counting and banding needs, the machine is being studied by other sections of the paper industry for other applications.

The device is an electrically-powered, cam and rocker arm operated unit, 50 inches long, 34 inches wide, and with a table height of 30 inches. Overall height is 52 inches, weight 425 pounds. Requires 110 volts, single phase A.C. for operation. A vacuum pump moving 97 cubic inches of air per revolution is required for envelope feed, or the machine may be attached to a plant vacuum system of that rating. Equipment will operate with a 1 h.p. 1150 r.p.m. 110 volt A.C. motor turning a pump which will draw 6 inches of mercury. Recommended by the producer is an 8-inch pump which requires 1½ h.p. 200 volt, three phase A.C. motor, also a vortex oil filter for the vacuum side of the pump.

Write for descriptive booklet.



### Power Dispenser for Steel Strap

The mill type power strap dispenser is manufactured by the Signode Steel Strapping Co., 2600 N. Webster Ave., Chicago 47, Ill.

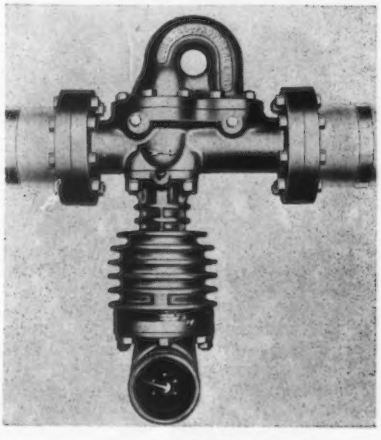
Built to handle ribbon-wound strap in ¾″, 1¼″ and 2″ widths, the machine feeds strapping at the rate of 6 to 10 feet per second. Cutting requires only 2 to 4 seconds. Compactly made, it occupies a space of only 3′ x 5′, stands only 3′ high, and weighs 874 lbs.

Operation of the dispenser is described simple and foolproof. The operator places a coil of strapping in the coil holder, feeds the end of the strap into position manually, and closes the safety door. (The machine cannot start until the safety door is closed.) A push button controls the length of strap to be fed through the cutter jaws. When the proper length is reached, the button is released. Cutter handle is pulled toward the operator and the job is done.

Practical for any application which uses heavy-duty steel strapping in volume.

### Improved Steam Meter

Builders-Providence, Inc., 345 Harris Avenue, Providence, R. I., announces a redesign of Model SMKS Shuntflo Meter for steam, air or gas. Used widely for departmental heating and process work, the meter boasts the following improvements: 1. New, streamline damping chamber to facilitate a more uniform cooling system; 2. All Meehanite body casting for greater



strength and durability; 3. A more simplified rotor mechanism to assure greater efficiency of operation, easier replacement of parts and longer service; 4. Strengthened rotor shaft designed to withstand slugs of undue condensate in the line or sudden fluctuations in line pressure.

Shown is front view of unit with single, combination cooling and damping chamber.

### Masonry Water Repellent

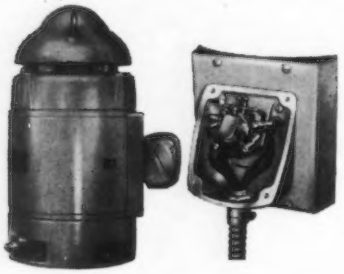
Daracone is described as a new kind of masonry water repellent which takes the fullest possible advantage of the marvels of silicone chemistry. Developed by Dewey and Almy Chemical Co., Construction Specialties Div., Cambridge 40, Mass., and Montreal 32, Can., the new product stops leaks in masonry walls, combats efflorescence, resists staining, and prevents spalling of the surface.

Equally effective on vertical or horizontal surfaces, it is applied to a clean, dry masonry and lines pores, fissures and cracks with a film of insoluble silicones. This barrier penetrates deep and prevents rain from driving through the porous masonry to damage interior walls, it is stated. Thus is eliminated a major cause of efflorescence because the pores are lined but not clogged, and the masonry is able to breathe. Also by preventing moisture entry, dirt, soot and rust deposits are run *off*, not *into* the wall, and damaging frost action is no longer a problem.

The treatment is invisible, contains no waxes or oils to alter the appearance or texture of the masonry, and can be applied over water-base cement paints. One coat is said to be sufficient for most conditions.

### Single Phase Vertical Hollowshaft Motors

Recently added to the line of U. S. vertical motors is a series of single-phase hollowshaft motors, types SCU-C and SCU-R. Available from 1½ to 5 h.p. with speeds of 1800 or 3600 r.p.m., from U. S. Electrical Motors Inc., 200 E. Slauson Avenue, Los Angeles 54, Calif., the SCU-C and SCU-R motors feature asbestos protection of windings, Lubriflush lubrication, nor-



malized castings, solid centricast rotor, downdraft ventilation, adjustable hollowshaft, reverse protection clutch, conservatively rated capacitors and weatherproof housing.

Introduced into the line of motors, is a simpler method of disconnecting the starting capacitors, viz., the accelerating type relay. Similar to those used in hermetically-sealed refrigerator units, the relay was designed into the split-type outlet box located on the side of the motor, and provides maximum performance with positive relay operation over the widest variation in line voltage, it is stated.

Descriptive bulletin available.

### Acid and Alkali Resistant Coating

Known as Barreled Sunlight Acid and Alkali Resistant Coating, the product of Barreled Sunlight Paint Co., 24 Dudley St., Providence 1, R. I., the chemically-resistant finish is intended for use where conventional type finishes have proven unsatisfactory.

Applied by brush or spray, it dries, says the manufacturer, in two to three hours to a hard, tough, medium gloss finish of excellent flexability. Since it dries entirely by evaporation of its solvents, it may be recoated immediately after the 2-3 hour drying period. It has good hiding properties and on smooth surfaces will cover up to 300-400 square feet per gallon, it is said. Highly impervious to moisture and seepage, and resistant to fumes and solutions of corrosives, it also is recommended by the maker for helping to control mildew growth; it can be washed repeatedly with antiseptic solutions; is impervious to alkali, and is ideal for painting newly-poured concrete floors and walls at or below ground level.

Descriptive literature available.

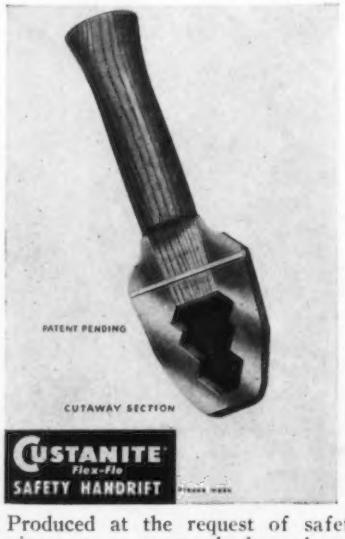
### Mercury Switch

Newly designed mercury switches, embedded in plastic "potting" compounds for added protection against mechanical shock, impact or other mechanical hazards are announced by Micro Switch Division, Minneapolis-Honeywell Regulator Co., Freeport, Ill.

In addition to being more rugged, the embedded designs also offer additional new means of mounting mercury switches. First of the new assembles is the IMPI switch, overall size 2½ inches long, ¾ inch wide, and 1⅛ inch high. This unit provides less than 1 degree differential angle, with an electrical rating of 2 amperes 115 volts a-c; or 1 ampere 115 volts d-c. Contact arrangement of this switch is single-pole, normally open. Mounting holes have been provided to accommodate ¼ inch mounting screws and pins.

### Safety Handrift

A drift for production and maintenance use which combines unusual features of safety and economy is announced by Custanite Corporation, Box 66, Larchmont, N. Y.




Produced at the request of safety engineers to overcome the hazards and high hidden costs of improvised hand drifts, Flex-flo Safety Handrift features Rivet-lok pinning designed to prevent the head from flying off the non-slip handle; a special analytically-controlled alloy which can't chip, flake, or spark; Flex-Flo construction which employs the principle of Controlled Compression to give extreme durability while simultaneously providing mushroom-free service.

**It will speed the reply to your inquiry to mention Paper Trade Journal.**

## WHAT'S NEW IN PUBLICATIONS

**Printing Abstracts.** Vol. 7, No. 4, April 1952. Summaries of recent technical and scientific articles. Section 7 is devoted to paper and boards. Confidential to members of The Printing, Packaging & Allied Trades Research Assn., Patra House, Randalls Rd., Leatherhead, Surrey, England.

**Reduce Your Wet-Strengthening Costs with Plaskon Aminoplast.** Bulletin #PA-52. Illustrated sales copy. Libbey-Owens-Ford Glass Co., Plaskon Division, Toledo 6, Ohio.

**10-67 Per Cent More Production.** Bulletin #599. Sales copy on Jacketed Steel Rolls, with technical details, performance charts and installation cuts. Lukenweld, Division of Lukens Steel Co., Coatesville, Pa.

**The Blue Chips are on Consolidated Enamel Papers.** Bulletin. Sales copy. Consolidated Water Power & Paper Co., 135 La Salle St., Chicago, Ill.

**Insul-Mastic in Industry.** Brochure. Informs about Insul-Mastic materials which are unique in the coatings field, and cites some examples of their uses. Insul-Mastic Corp. of America, Oliver Bdlg., Pittsburgh 22, Pa.

**Plasticizers.** Technical data bulletin. Gives the sales specifications, typical properties, compatibility or solubility of these materials and their uses. Dow Chemical Co., Plastics Dept., Midland, Mich.

**Rapistan Casters and Trucks.** Catalog CT-52. Sales and technical copy. Illustrated. Rapids-Standard Co., Inc., Grand Rapids, Mich.

**Parks Jacketed Cocks, Fittings and Jacketed Piping.** Bulletin 152. Discusses fundamental requirements, design of jacket sections, provision for expansion, etc., and various data and specifications. Parks-Cramer Co., Fitchburg, Mass., and Charlotte, N. C.

**Estimating Standards for Printers.** Book. Replaces the Standard Book on Estimating for Printers, now out of print, and publication of which has been discontinued. 278 pp. $5 per copy plus 25c for handling and mailing. Fred W. Hoch, 461 Eighth Ave., New York, N. Y.

**Leather Belt Drive News.** Brochure No. 111. Features: Uni-Pull Drive Replaces V-Belts and Solves Problem of Motor Running Hot; How to Install Leather Belts Correctly. American Leather Belting Assn., 320 Broadway, New York 7, N. Y.

**Dust and Fumes Topics.** Booklet Vol. 1, No. 1, 1952. Featuring; The Old and

*(Continued on page 36)*

**W. H. Blessing and D. A. Tripp**

of Research Corp., Bound Brook, N. J., Show How

# Electrostatic Precipitators Play Important Role in Recovery of Paper Chemicals

The first electrostatic precipitator for collection of chemical compounds from paper mill recovery furnace gases went into service many years ago. Since then, scores of additional units have been installed throughout the United States and all have established consistently good performance records.

This success can be justly credited to the excellent engineering design which incorporates corrosion resistant construction, ideal arrangements in the case of the vertical flow design for inlet and outlet gas ducts and gas distribution control. electrode banks that can be separately energized, effective cleaning by rapping, ease of disposal of collected material, and layouts which tie in very readily with the other plant equipment and which permit the use of an independent large stack or stub stack mounted on the precipitator.

The principle of operation of electrostatic precipitators is based upon impressing a high voltage unidirectional current flow across two spaced sets of electrodes, one set of which is filamentary, such as rods, wires, etc., and are known as the discharge electrodes, and the other set known as the collecting electrodes, having smooth or extended surfaces. The high voltage discharge between these electrodes ionizes the gas and charges the suspended particles after which they are attracted to the electrode of opposite electrical sign. As the discharge electrodes are filamentary most of the particles are charged the same polarity as these electrodes and consequently deposit on the collecting electrodes. The usual practice has been to vibrate the material from the collecting electrodes into hoppers for ultimate disposal.

In most installations, until recently, the dust is collected in hoppers located at the bottom of the precipitator from which it is usually conveyed by screw conveyors to tanks where it is taken up in the black liquor for return of the recovery system. While this recovery method in general functions satisfactorily, it means that the dust has to be handled in the dry state until it reaches the dissolving tanks. Consequently, precautions have to be taken to insure against condensation in the hoppers which involved steam coils and heat insulation. Furthermore, hopper vibrators have to be used to guard against buildup and plugging in the hoppers, and steam jacketed conveyors are necessary to transport the dust from the hoppers to the dissolving tank, all of which involves investment cost.

Since the material must be taken up in the black liquor for reuse, as a matter of principle, it was desirable to get it into the black liquor as soon as possible after it had been removed from the gas. Accordingly, studies were made on the possibility of eliminating the hoppers and substituting a wet recovery system located in the bottom of the precipitator.

With this arrangement essentially the bottom of the precipitator acts as a liquor sump or tank through which the black liquor from the evaporators flows and takes up the collected dust rapped from the electrodes. Motor driven rotary agitators are provided to circulate the liquor and facilitate solution or suspension of the dust in the liquor. Black liquor from the multiple effect evaporators flows to the wet bottom of the precipitator where is essentially forms a liquid bath about one foot deep. Liquor flow and level are controlled by automatic means.

This bath is agitated as noted above and the dust rapped from the electrodes falls directly into the liquor and is taken up in solution or suspension. The process is continuous, the black liquor entering the wet bottom of the precipitator taking up the dust and discharging through a drain to pumps from which it discharges to the feed going to the disc evaporators.

The surprising finding in this method of handling the dust is the lack of any substantial amount of solid material in the bottom of the liquor tank. For instance, during an inspection of a typi-

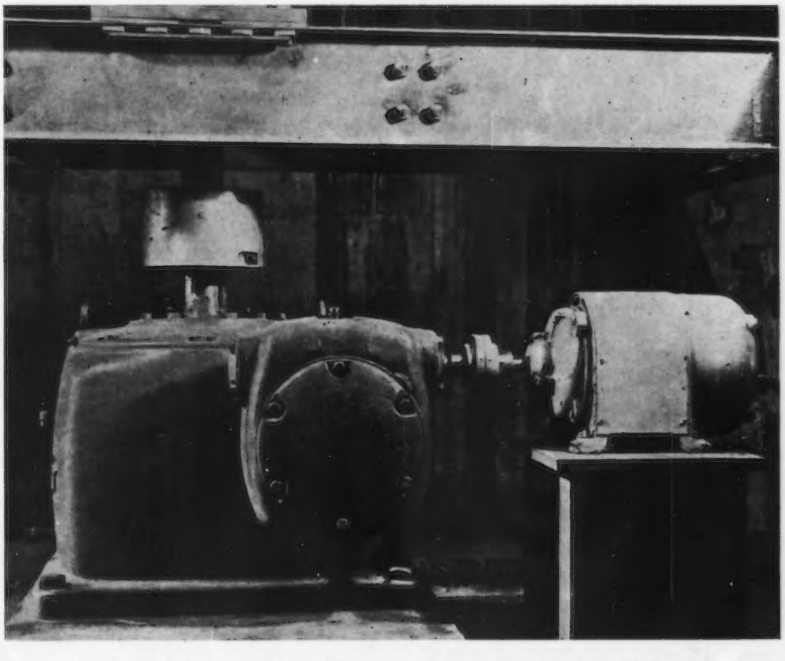


**Figure 1—The black liquor is agitated by a motor-driven rotary agitator to keep the dust in solution or suspension.**

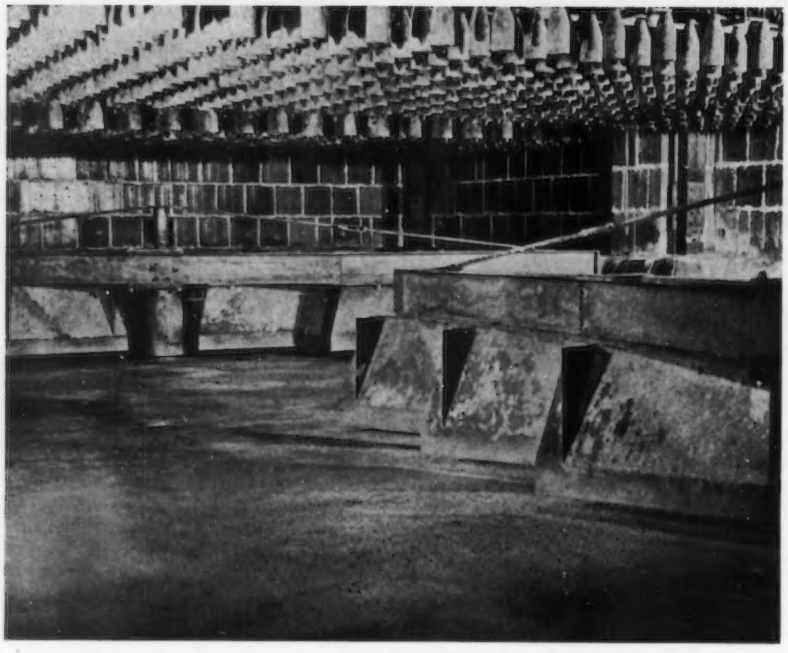


**Figure 2—Shows the internal view of a precipitator section with ducts on the floor before assembly.**

cal installation it was found that there were only minor amounts of sediment or solid material in the bottom of the liquor tank.

The fact that this method of handling the dust eliminates any hopper maintenance and cleaning is very important from the plant operator's standpoint, moreover it is gratifying to know that in plants where this innovation is in operation the operators are very pleased with its operation. As a result of this work it is felt that this method of removing material from the precipitator offers definite operating improvements as well as simplicity of design and overall economies.

**Figure 3—Showing view of (Research Corp.) wet-bottom precipitator installation at Potlatch Forests, Inc. recently completed.**

While electrical equipment located in a substation and utilizing mechanical type rectifiers is still a popular arrangement, electrical equipment utilizing either mechanical or vacuum tube type rectifiers and located in cabinets has been developed for this service. In the case of cabinet arrangements the high tension transformers and rectifiers are arranged in cabinets which in turn are located near the precipitator thereby eliminating the necessity of special high tension cable. The control panels can either be located on these cabinets or installed at a place in the recovery room if so desired.

Electrical precipitators have become a tried and accepted tool in the sulphate and soda mills for the reduction of chemical losses. Actual operating experience with a large number of installations over the years in spray type furnaces have indicated recoveries in the precipitator ranging from 88 to 145 pounds of sodium compounds per ton of pulp. Actual precipitator efficiencies vary from 90 to 99 percent dependent upon the design basis and volume of gas handled.

# ASSOCIATIONS

## Specifications Stressed at Conn. Valley Meeting

More than 300 members and guests registered at Toy Town Tavern, Winchendon, Mass., for the two-day joint meeting of the Connecticut Valley Division of The American Pulp and Paper Mill Superintendents Assn. and the New England Section of TAPPI. The meeting was held on May 16-17.

Opening with luncheon on May 16, the program included the presentation of four papers during the afternoon. The speakers were: Lewis Reid, Metropolitan Life Insurance Co., New York, N. Y.; Harry O. George, Laboratory Division, International Business Machines Co., Endicott, N. Y.; Philip L. Stoats, head of Paper Laboratory, General Electric Co., Pittsfield, Mass.; and Charles Woodcock, Central Research Laboratories, General Foods, Inc., Hoboken, N. J.

Mr. Reid, who spoke on the subject of Permanent Papers, stressed the importance of permanency in paper that his company selects for its various records. He commented that 100 percent rag paper was best for their purposes—yet, due to high costs, there has been a down grade from a set policy of 100 percent rag to 75 percent rag and even 50 percent rag.

Business Papers was the subject of Mr. George. He listed various specifications to which paper made for his company for use as paper taps must conform. Among the data were information on basic weights, thickness, strength, durability, and moisture content.

Mr. Stoats spoke on Electrical Papers. He said that one of the largest problems of his company concerns paper and paper products for electrical insulation. He, too, touched briefly on specifications. Also, he commented on some of the objectionable items in papers used in his field.

Specifications likewise came in for consideration by Mr. Woodcock in his remarks on Packaging Papers.

A question period followed the four talks to complete the afternoon session.

Dr. Harold W. Knudson, Hollingsworth and Vose Co., chairman of the New England Section of TAPPI, presided over the afternoon session.

Dinner in the evening was followed by a talk by John L. Calkin, head of the Pulp and Paper Foundation, University of Maine. Mr. Calkin stressed the necessity for industry to aid in the training of students for technical positions in pulp and paper mills.

The morning of the second day was given over to a presentation by Albert E. Bachmann, vice-president, Missisquoi Corp., Sheldon Springs, Vt. His subject was The Practical Man and The Technical Man.

The balance of the day was given over to golf for the men, a motor trip to the Cathedral of the Pines at Ridge, N. H., for the ladies. There were also putting contests and cards for the ladies.

A cocktail party in the evening sponsored by the allied industries and presided over by C. I. Horton, Henry Mellen, and Ray Kilty, and a dinner and dance completed the festivities.

Helen V. Kiely was responsible for the program; J. D. Retallick and P. Applegate, for publicity; C. I. Horton, for finance; A. Montagna, for arrangements; and C. C. Decker, for golf.

# all wrapped up and *Going Places*

Pity the poor product that's packaged in drab paper. It won't go very far in today's highly competitive markets. That's why America's smartest merchandisers want paper that provides standout package-appeal. Titanox pigments will add sales impact to just about any kind of paper. Colors are brightened, printing legibility is boosted, yellowing is checked, show-through is minimized. Our Technical Service Department will be glad to show you how easily Titanox pigments can be added at a convenient stage of your paper processing.

Titanium Pigment Corporation, 111 Broadway, New York 6, N.Y.; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7.

In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

1603

® **TITANOX**

*the brightest name in pigments*

**TITANIUM PIGMENT CORPORATION**

*Subsidiary of* NATIONAL LEAD COMPANY

**Dr. Joseph E. Atchison**

Chief Pulp and Paper Branch, Mutual Security Agency, Washington, D. C., Outlines

# Processes Available for Production of Pulp from Sugar Cane Bagasse

## Introduction

Over the past 100 years cane bagasse has received much publicity as a possible raw material for pulp and paper manufacture. A tremendous amount of experimental work has been carried out, hundreds of patents have been granted on processes for its utilization, and other hundreds of articles have been published. One process dates back as far as 1838. Many of these reports have come from reliable and serious investigations, but many others have emanated from promoters with complete lack of basic knowledge in the field. One group has contributed much worthwhile knowledge, whereas activities of the other group have been highly detrimental to progress toward large-scale commercial uses of bagasse for production of pulp and paper.

An historical review of the more serious experimental work, combined with a study of present-day successful commercial operations in which bagasse is being used, establishes a few basic facts which future workers in the field should take into consideration. These may be stated as follows:

1. Except for production of coarse products, such as wallboard or corrugating board, it is absolutely essential to separate the pith from the bagasse fiber if a high quality product is to be produced from the fiber. This is particularly true if bleached pulp or paper is to be produced.
2. If the pith is first removed, the fiber itself is an excellent raw material for production of high quality pulp and paper products.
3. The pith-free fiber can be converted easily into high quality pulp without technical difficulty by any of the ordinary pulping processes, or well known modifications of these processes.
4. The choice of the various processes available is very greatly a matter of economics, depending to a considerable extent upon the specific location of the plant.

In spite of the above facts, during the past few years there have been loud and high sounding announcements made almost weekly of wonderful secret processes for production of pulp, newsprint, paperboard, dissolving pulp, and other products from bagasse. Most of these so-called secret processes are not secret at all and are merely poor modifications of the ordinary processes commonly known to the entire pulp and paper industry. In many cases they are being promoted by strangers to the paper industry who do not even know that the same processes were described in the literature years ago. The writer feels that payment of royalty on any of these so-called secret or patented processes is questionable economics unless they can be proved to be far superior to the ordinary processes, or well known modifications of these processes.

In this paper an attempt is made to describe briefly the various processes which are available for production of pulp from bagasse, and about which the principles are already well known to the industry.

## Separation of Pith From Fiber of Bagasse

Although the fibers of bagasse are fine, strong and pliable, the short, nonfibrous cells or pith cells in bagasse have very low felting power. If left in the pulp, they render it more difficult to bleach, decrease the rate of drainage on the paper machine, decrease the strength properties and make the product unsuitable for conversion into high grade paper. Digestion of the pithy material consumes much more of the chemical than does the fiber, yet it yields but little chemical pulp. On the other hand, if the pith is removed and discarded, the yield of pulp from bagasse may be entirely too low to permit economic mill operation. A great many investigators over the past 50 years have advocated separation of pith from the fibrous element, but few have attempted to put such a process into commercial operation because there was no use for the pith. As a result of this, many mills have failed in their attempt to produce a salable paper from bagasse, because they sought a high yield by leaving the pith cells in the finished product.

In recent years there has been increasing effort to find uses for the pith from bagasse. One of the most promising fields thus far involves its utilization as a major constituent in stock feed. A considerable amount of work is being done in this field at the present time in most cane sugar producing areas of the world. If this, or other proposed uses for the pith prove to be sound, and an efficient and inexpensive method is used to separate the pith from the fiber, the total yield of usable stock will be high, and former objections to the use of bagasse as a raw material for paper making will be overcome.

In fact, the key to successful use of bagasse for production of pulp is an efficient and effective commercial means of separating the pith from the fiber, followed by some economic use of the pith.

All of the various methods proposed in the past for separation of pith from the fibrous elements of bagasse fall into two general categories; i.e., dry separation and wet separation.

All of the dry separation methods consist essentially of further disintegrating the bagasse, then passing the mass through some type screen to sift out the pith. This method is being used in practically all of the commercial operations now producing pulp from bagasse. These include mills in Peru, Argentina, The Philippines, Formosa, and India. In most of these operations the pith is merely removed at the sugar mill and returned to the boiler plant for its fuel value. This, of course, represents the most obvious and easiest method for utilizing the pith. This method of separation has been satisfactory for the quality products produced and acceptable in these countries, and it may be entirely adequate if corrugating media and other coarse boards are to be the final products. However, it does not result in sharp separation of pith from fiber, and the further disintegration necessary to bring it about usually results in decreasing the average fiber length of the fiber fraction. Furthermore, the fibrous portion obtained by means of

paper sculpture by goveia-egan

FILLING THE BILL

NIALK™ chemicals for pulp and paper manufacture . . . specially developed to meet the exacting demands of the industry.

**NIALK** | *Liquid Chlorine*
*Caustic Soda*

**NIAGARA ALKALI COMPANY**

60 East 42nd Street, New York 17, N. Y.

Liquid Chlorine • Caustic Potash • Carbonate of Potash • Paradichlorobenzene • Caustic Soda • TRICHLORethylene
NIAGATHAL® (Tetrachloro Phthalic Anhydride)

the dry separation methods is not nearly so free of dirt and debris as that obtained by means of the more elaborate wet separation methods. Complete removal of this dirt in subsequent operations becomes a particularly difficult problem if high quality bleached pulp is to be produced which will be sufficiently clean to find acceptance in the U. S. market.

Because of the disadvantages of the dry separation method, there have been many advocates of wet separation techniques and a great number of such processes have been proposed and patented in the past. However, since there was no economical use for the pith resulting from these wet separation processes, none of them were ever perfected to the point that they were used in commercial operations on a paying basis.

As a result of intensive work in recent years, a far better understanding of this problem has been obtained by many workers in the field. It has been found that in any process for wet separation of pith from fiber, certain basic steps must be carried out efficiently and economically. These are as follows:

1. Thorough wetting and softening the bagasse either with or without chemicals.
2. Mechanical action sufficient to break the pith away from the fiber and to break up the pith bundles without breaking fiber bundles down into individual fibers.
3. Wet screening or other mechanical action to effect sharp separation of pith from fiber.
4. Dewatering both pith and fiber and processing pith for further use.

The writer feels certain that the problems involved in wet separation of pith from fiber can be solved satisfactorily by using equipment now available to the pulp and paper industry. Already significant studies have been made in this direction, using the principles outlined above.

Two of the most promising processes yet devised for wet separation of pith from bagasse fiber have been under development in the U. S. within the past two years. One of these developments has taken place at Louisiana State University, in Baton Rouge, Louisiana. This work has been carried out in LSU's famous Audubon Sugar School where the chemical engineering students operate a complete and highly modern sugar mill which serves as a commercial sized laboratory for the entire Louisiana cane sugar industry. The other process is under development at the Northern Regional Research Laboratory in Peoria, Illinois. This Laboratory, operated under the U. S. Department of Agriculture, has the responsibility for developing greater utilization of agricultural residues, including bagasse and straw. Both of these methods are well on their way to reaching a state of development whereby they can be used successfully in commercial operations.

In addition to the work being carried out in the U. S., reports have also been made of other intensive work in the field at laboratories all over the world.

## Processes Available for Pulping Bagasse Fiber

### A.—GENERAL COMMENTS

During the past 100 years various investigators have used almost every conceivable process for experimental production of pulp and paper from bagasse fiber. Furthermore, it has been found that almost any of the well known processes, or modifications of these processes, can be used to produce a satisfactory pulp. Therefore, the choice of the various processes available becomes greatly a matter of economics and is dependent upon local conditions at the site of the plant. Of course, some processes result in better quality pulp than others, so the technical aspects cannot be neglected, and technical studies must be coordinated closely with the economic studies if the proper choice is to be made.

Since straw pulp has been produced and used so successfully in Europe for manufacture into a great variety of high quality products, the processes used commercially for pulping straw must also be given full consideration when choosing a process for pulping bagasse. Once the pith is removed from bagasse, the remaining fiber can be handled in much the same manner as straw. In fact, clean bagasse fiber constitutes a raw material which is far superior to straw, in many respects, for production of high quality pulp and paper products.

In this paper, no attempt is made to describe all of the processes which have been proposed in the past for pulping bagasse. A description is given of only the processes which have been used successfully in commercial operations for production of pulp from either bagasse or straw, or those the success of which seems assured as a result of large scale test runs. Both batch type and continuous type processes are in use and the most commonly used of the processes are described in the following paragraphs:

### B.—BATCH TYPE PROCESSES

#### 1. The Soda Process

The traditional soda process, or some modification of it, is the most commonly used commercial process for production of pulp from agricultural residues such as bagasse and straw. In fact, most of the so-called secret processes appear to be modifications of the soda process.

The basic soda process involves cooking the bagasse fiber or other raw material under pressure in rotary or stationary digesters, using caustic soda as the active cooking chemical. In cooking, bagasse, chemical use might vary from 8 percent to 16 percent caustic soda, based on the dry weight of the fiber. This depends upon the quality of the product, whether or not a recovery system is used, and the importance of chemical cost, as compared to cost of equipment, steam, power and labor. Time of cooking varies from one to five hours and pressures vary from atmospheric to 100 pounds per square inch.

The soda process may be used either with or without a chemical recovery system, depending upon the economic factors involved. Most mills now producing straw or bagasse pulp by the soda process do not use a recovery process, but attempt to use the lowest possible chemical concentration for cooking. These mills either purchase the caustic soda in liquid form or produce it in their own electrolytic plants along with chlorine necessary for subsequent bleaching operations. In the latter case, they use salt brine as the basic raw material.

In wood pulp operations, and also in most esparto pulp mills, chemical recovery furnaces are used. In these mills a high percentage of the caustic is recovered in the form of soda ash. Then the basic make-up chemicals are soda ash and lime. If the recovery systems are efficient, consumption of soda ash might be as low as 200 pounds per ton of pulp produced. In any large scale operation, regardless of the source of the caustic, it is usually far more economical to install a complete chemical recovery unit.

It has been reported that the silicates from straw and bagasse cause great trouble in operating a soda recovery unit and there are many patents for removal of silica from the black liquor. In actual practice, however, the British esparto mills, when using straw during World War II, experienced no great trouble from silica in the straw black liquor. Bagasse, normally, has a much lower silica content than straw, thus it is believed that a soda recovery system could be used successfully in a bagasse pulp mill.

The standard batch type soda process is being used in many countries of the world for production of pulp from agricultural residues. The writer has seen this conventional soda process in use in Germany for production of high quality bleached straw pulp, and in the United Kingdom for production of high quality esparto pulp. It can be used with equal success with bagasse fiber serving as the raw material.

A slight modification of the batch type soda process has been used very successfully by the W. R. Grace Company in Peru. In this operation bagasse is used as the raw material for a great variety of paper products. They use a small amount of sulfur along with the caustic, thus gaining some of the advantages of the sulfate process.

#### 2. The Marsoni Process

One of the most unusual variations of the soda process has been used in Italy for many years. It is the process in use by the Marsoni mill at Villorba, which produces straw pulp and converts it into glassine paper in a com-

pletely integrated operation. They use a unique cold caustic process which requires a period of about 15 days to complete the reaction.

After preparing the straw in the usual manner, it is conveyed on a continuous basis through a dosing and mixing chamber where caustic soda solution is added in an amount equivalent to about 10 percent caustic based on the dry weight of the straw. The wet straw is then carried by a long screw conveyor, during which time the caustic solution is almost completely absorbed by the straw, to large concrete chests in which the digestion process takes place. The straw thus treated is allowed to stand in these chests without agitation or heating for a period of approximately 15 days. It is then washed out of the bottom of the tanks by means of high-pressure water hose, conveyed to washers, screened, run through rifflers, and thickened in the usual manner.

Some of this pulp is used in the unbleached form for production of high quality glassine paper. Part of the pulp is bleached in a one-stage hypochlorite process, and the bleached pulp is used for glassine either alone or in combination with bleached sulphite wood pulp. It is particularly suitable for glassine paper because of the high hemicellulose content resulting from the extremely mild digestion process. Because of this slow, mild process, the pulp is superior in quality and yield to the straw pulp produced by the more rapid processes, and the company has an excellent market for all of the glassine paper produced. This process could also be used for production of bagasse pulp. However, it requires a tremendous amount of initial capital investment in reaction chests and it is doubtful that it would be found to be as economical as other more rapid processes.

#### 3. The Sulfate or Kraft Process

The sulfate process has come into great prominence in the past 30 years and has almost replaced the soda process for production of alkaline pulp from coniferous woods. The details of the process are similar to those of the soda process, with the exception that the loss of soda in the recovery system is made up by addition of salt cake (sodium sulfate) instead of soda ash. The actual sulfate cooking liquor contains caustic soda and sodium sulfide. The presence of the sodium sulfide results in a milder action which gives a slightly increased yield of a pulp which is more easily bleached than that prepared by the soda process.

The sulfate process is almost always used with a recovery system. Although it has definite advantages over the soda process in most respects, it has one great disadvantage. This is the fact that it is attended by a most persistent, penetrating disagreeable odor, due to the organic sulfur compounds formed in the reaction. However, every effort is being made to control this odor and some success has been attained in recent years.

One of the most successful bleached straw pulp mills in the world uses the sulfate process with rotary globe digesters. This is the "Phoenix" mill in Holland which has been producing high quality bleached straw pulp since 1898. During all this period, this pulp has competed successfully on the world market with Scandinavian wood pulp and has actually sold at premium prices. Some of the finest paper mills in the world in Holland claim that certain properties of this bleached straw pulp enables them to get characteristics in the paper which are not attainable with wood pulp alone.

It has also been stated many times that it is impossible to successfully operate a sulfate recovery system if silicate containing raw materials such as straw and bagasse are used. This is because the sodium silicate content of the black liquors becomes so high that it causes difficulty, in causticizing the green liquors, in reburning the lime sludge, and in settling the white liquor. However, the "Phoenix" mill in Holland has a complete recovery system which is working in an excellent manner. They have completely solved the problem of handling the silicates. Bagasse normally contains far less silicate than straw.

#### 4. The Sodium Monosulphite or Neutral Sulphite Process

The Sodium Monosulphite process for production of straw pulp has been used for many years in Italy and Germany. The writer has visited several of these mills and has seen them producing bleached straw pulp of excellent quality at comparatively low cost. One mill in Germany is producing 100 tons of bleached market pulp per day by this process and mills in Italy are producing as much as 35 metric tons per day.

With this process the mills in Europe use approximately 8 percent to 10 percent sodium monosulphite and 3 percent to 5 percent soda based on the dry weight of the straw. The amount of cooking chemical is very much dependent upon the silica content of the straw and the quality of the product desired. The yield of bleached pulp also varies greatly depending upon the silica content of the raw material. Thus bleached pulp yields may vary from 42 percent to 48 percent based on the dry weight of the fibrous raw material.

When using this process, as well as other batch processes for cooking agricultural residues, most mills use rotary globe digesters, or cylindrical tumbling digesters. The latter can be fitted with blow valves. Most mills also add the cooking liquor to the fibrous raw material before the latter is fed to the digesters. This method of addition of chemical solution, in some type of mixing and dosing chamber, provides for thorough mixing of chemical with the fibrous material and allows complete filling of the rotary digesters in one fill.

None of the mills now using this process have any chemical recovery systems. Thus, the initial investment costs are comparatively low and small units of 25 tons per day or less have been operating efficiently. In addition, the process is simple to operate and easy to control. For these reasons, it has been gaining particular favor in countries which are establishing pulp production facilities for the first time. The basic chemicals are sodium monosulphite ($Na_2SO_3$) and caustic soda. Cooking time varies from 2 to 8 hours, cooking pressure varies from 50 to 100 pounds per square inch, and liquor ratio varies from 4 to 1 to 7 to 1.

The Northern Regional Research Laboratory at Peoria, Ill., has conducted rather extensive experimental work on a modification of this monosulphite process for production of straw pulp. Instead of caustic soda, they use soda ash or sodium bicarbonate along with sodium sulphite. This amounts to a neutral sulphite process which is similar to that which has gained widespread use in the United States for production of semi-chemical pulp from hardwoods. By using this procedure, the Peoria Laboratory has obtained bleached pulp yields of as much as 50 percent based on the dry weight of the straw. The higher yield obtained by this modification of the monosulphite process results from using mild buffering agents rather than caustic to maintain the alkaline pH desired. When using these mild agents, the silica in the straw is not removed and thus adds to the yield of the finished pulp. For papers in which a high ash content is not objectionable, this high yield process produces an excellent bleached pulp.

One mill in The Netherlands is producing high quality straw pulp by means of this modified monosulphite process. Undoubtedly either the monosulphite process with caustic, or the modified version with soda ash could be used for commercial production of high quality bleached bagasse pulp.

#### 5. The Acid Sulphite Process

Most investigators have found that the acid sulphite processes are not as suitable for pulping bagasse and straw as are the alkaline processes. However, due to unusual circumstances, during the occupation of Formosa by the Japanese, two bagasse pulp mills were established which successfully used the acid magnesium sulphite process. They were able to get magnesia from Manchuria and sulfur from Japan.

One of these mills, the Taiwan Pulp Manufacturing Co., was located at Tatu, Taichung, and the other, called Ensuiko Pulp Co., was at Hsinying, Tainan. The Tatu mill started operations in 1939 and the Hsinying mill started in 1940, with capacities of 50 and 100 tons of bagasse pulp per 24 hours, respectively.

Although the bagasse pulp thus produced by the acid sulfite process was not of high quality, it was exported to China, Japan and South Pacific countries in large quantities to meet the shortage of pulp during the war years. However, during the latter part

of the Pacific war, both of these plants were put out of operation by allied bombing.

Since the war, the Taiwan Pulp and Paper Corporation, a Government-owned enterprise, has put the Hsinying pulp mill back into operation for production of bleached bagasse pulp. This mill began operations again in 1947, but it has not yet been able to reach prewar production levels. Due to inability to get magnesia from Manchuria, combined with other factors, the plant has abandoned the use of the magnesia base acid sulphite process. They have now adopted the monosulphite process, with a small concentration of caustic soda as a buffer. This process is very similar to that being used extensively in Europe for production of straw pulp.

The Hsinying pulp mill, by using this monosulphite process, now produces a bleached bagasse pulp which is far superior to that formerly produced by the magnesia base acid sulphite process. This experience seems to back up the experimental findings of so many investigators who have reported that the acid sulfite process is unsuitable for production of high quality pulp from agricultural residues.

#### 6. The Mechano-Chemical Process

Still another variation of the batch-type soda or sulphate pulping process is the Mechano-Chemical Process which has been developed at the Northern Regional Laboratory in Peoria, Ill., for pulping agricultural residues. This process involves a batch pulping operation, but instead of the pulping being carried out under pressure in conventional digesters, the cooking is done in pulpers, such as the Hydrapulper, at atmospheric pressure and about 100°C., working at about 10 percent consistency. Direct steam is used in the pulper and the cooking time is from one-half to one hour for production of either a pulp suitable for high quality corrugating media or a bleachable chemical pulp.

The rapid pulping rate is attributed to the impact action of the impeller of the pulper in forcing the chemical liquor into and out of the straw or other agricultural residue material. This process has been used in rather large scale commercial trials for production of pulp suitable for high quality corrugating media and for production of bleachable pulp. Excellent quality pulp has been produced from both straw and bagasse fiber by cooking these materials in the Hydrapulper for one-half hour at 98°C., with 10 percent to 12 percent caustic soda or sulfate chemical based on the dry weight of the raw material. It is claimed that the screened Mechano-Chemical pulp is fully equal in strength properties to that obtained by cooking in digesters with the same amount of chemical for two hours at 170°C., and 100 pounds per square inch pressure. At the same time, the yield of Mechano-Chemical screened pulp is reported to be considerably higher than the yield obtained by the pressure cooking method. The yield of completely clean, bleached pulp of 82.4 brightness has been reported to be 47 percent of the original weight of the dry straw.

The Mechano-Chemical process appears to offer some definite advantages over other processes from a technical standpoint. However, the high power consumption and high steam consumption necessary to move and heat the large volume of liquid in the Hydrapulper when operating at a liquor ratio of 10 to 1, offer certain disadvantages from an economic standpoint. Any decision on choice of this process, as compared to any of the other batch processes, would require a careful technical and economic study of all factors included with particular attention being paid to conditions existing at the specific location of the mill in question.

### C.—CONTINUOUS PROCESSES

#### 1. General Comments

Over the past twenty years a great number of continuous processes have been proposed for production of both wood pulp, and pulp from agricultural residues. Many of these processes have been patented and some of them are in commercial use. Most of them are modifications of either the soda or sulfate processes. There still exists a considerable amount of disagreement as to whether or not a continuous process offers any overall advantages over a simple batch process. Proponents of both methods have some excellent arguments on their side and the writer will not attempt to go into all of these. Again, it is very much a matter of choice depending upon a number of technical and economic factors which must be studied thoroughly for each mill location.

Whether the continuous processes have any overall advantages or not, some of them are in wide use in many parts of the world. These continuous methods lend themselves particularly well to pulping agricultural residues. It is in the field that they have found their greatest use in other countries of the world. However, in the U. S. the continuous methods have been used to the greatest extent on hardwoods for production of a semi-chemical pulp for corrugating media, or a rough pulp for structural board.

The continuous processes which are most commonly used for pulping agricultural residues, and which are suitable for bagasse fiber are described below:

#### 2. The Huguenot Process

The Huguenot Process is a variation of the soda process which has been in use in Europe for many years. A number of mills in France use this process for production of straw pulp for corrugating board, and for rough quality wrapping paper. It is a continuous process in which about five percent caustic soda is used, based on the dry weight of the straw. The straw is fed continuously into the top of a tower at which point it is sprayed with the caustic solution. As the straw reaches the bottom of the tower, it enters a reaction chamber to which steam is added to heat the mixture to about 100° C. The reaction chamber is equipped with a slow moving agitator which keeps the high density straw in motion. This reaction chamber is a long horizontal cylinder, and the straw gradually passes from one end of the chamber to the other end allowing a reaction time of about one-half hour at this temperature. From the reaction chamber, the straw is dropped into a large deep chest through which it moves slowly, and from which it is discharged continuously after an additional reaction time of about four hours. No additional heat is added during its passage through this chest. At the end of this reaction time, the straw is sufficiently cooked for use in high-quality corrugating board, or in rough types of wrapping paper.

#### 3. The Celdecor-Pomilio Process

The Celdecor-Pomilio Process, which is another variation of the soda process, is one of the most widely used processes in the world today for production of pulp from agricultural residues, including bagasse. This process was originally developed as the Pomilio process in Italy and has been modified and improved greatly by the Cellulose Development Corp. in England.

Aside from the fact that the Celdecor-Pomilio process is continuous, the other main basic difference between this process and others lies in the relative amounts of cooking chemical and chlorine used in the complete pulping and bleaching processes involved in production of fully bleached pulp. In the normal soda, sulfate or monosulphite processes, most of the lignin removal is carried out in the first digestion or cooking stage. This cooking stage is followed by bleaching with relatively small amounts of chlorine and hypochlorite with a mild caustic extraction stage between the chlorine and hypochlorite stages. In contrast, the Celdecor-Pomilio process involves a mild caustic cook followed by use of relatively large amounts of chlorine, hypochlorite and caustic in the bleaching operation.

Initially, the Pomilio process was designed so that the products of an electrolytic plant could be used in approximately the ratio in which they came from the cells. This made it attractive to countries which had no established chemical industry but which had plentiful supplies of salt and low cost power. This resulted from the fact tht the only raw material required, other than fiber, was ordinary salt in the ratio of about 0.5 tons of salt per ton of bleached pulp product. The pulping and bleaching chemicals then consisted of the caustic soda and chlorine, which were used just as they came from the electrolytic cells. Since this resulted in using a high propor-

tion of chlorine in the overall process of cooking and bleaching, the Pomilio process became known as a chlorine process.

When operated in this manner, with such an extremely high ratio of chlorine, the old Pomilio process was never an outstanding success. However, since The Cellulose Development Corporation has taken the process over, they have made many changes which have resulted in decided improvement in the basic process. They have found that better results are obtained by increasing the amount of caustic soda in the cooking process. Thus, they have abandoned the idea of using the products of an electrolytic plant in the exact ratio in which they come from the cell. However, they still use a relatively mild soda cook followed by a relatively greater proportion of chlorine than is used in the normal soda, sulfate and monosulphite process for producing bleached pulp.

As now used in a large number of full scale plants in various parts of the world, this process gives an excellent quality, clean bleached pulp from straw, bagasse, esparto, and other agricultural residues.

The writer recently visited a new bleached straw pulp mill in England which has been using the complete Celdecor - Pomilio pulping process for about one year. Operations in this plant are described briefly as follows:

From the straw preparation plant, the clean straw is dropped into a mixing and dosing machine, where the cooking chemical solution is added continuously. At this point about 11 percent caustic is taken up by the straw, basde on the dry weight of the fiber. The wet straw is then conveyed to the top of the cooking tower and fed into the closed top of the tower by means of a screw conveyor. As the straw passes down through the tower very slowly by means of gravity, it is heated to about 110° C, which is adequate to cook the straw. Total reaction time is about two hours. The semi-pulp is removed continuously from the bottom of the tower after dilution with hot water or black liquor. The slurry then goes to a two stage washing system using vacuum washers, after which it is run to screw presses for dewatering.

This washed pulp is dewatered to about 25 percent consistency in small screw presses. From these it is run through an opening machine which opens the pulp to expose a greater surface area for subsequent chlorination. It is discharged from the opening machine in a loose form over the top of chlorinating towers of about 20 inch diameter.

Thees chlorinating towers, about 25 feet high, have several chlorine gas inlets around the periphery of the towers well toward the bottom. Gaseous chlorine is added at these points so that the fiber takes up an amount of chlorine equivalent to about 12 percent based on the dry weight of the bleached pulp. From the bottom of these towers the pulp is taken to washers, then is treated with caustic solution in an amount equivalent to about 3 to 4 percent of the weight of the pulp. The treated pulp is dropped into a reaction chest in which it has a retention time sufficient to dissolve the chlorinated compounds.

From the caustic extraction stage, the pulp is pumped to another washer. It is then run over coarse shaker screens to remove nodes and other uncooked straw particles. These rejects are diverted to an adjoining board mill where they are repulped and used to good advantage. From the coarse screens, the pulp goes over fine screens after which it is thickened and treated with hypochlorite solution.

Following the hypochlorite stage, the pulp is given a final wash on a vacuum filter and is pumped to the large paper mill in slush form for use in various grades of paper.

In addition to its work on straw, the Cellulose Development Corp. has carried out work on use of bagasse for production of pulp and paper. The process is already in use for production of bleached bagasse pulp at Rohtos Industries in India (20 tons), and Celulosa de Filipinas (15 tons) in the Philippines. Both of these mills convert the pulp into paper in integrated operations. There are also several other mills now under construction which will use the Celdecor process for converting bagasse into pulp or board.

It should be pointed out, in describing this process, that if the complete Celdecor process is used, the chemical costs are high unless low cost salt and low cost power are available. Because of this fact, many companies use only certain parts of the Celdecor process, using more conventional pieces of equipment for other phases of the operation. Some mills use the continuous alkaline reaction tower for the soda pulping, then bleach this pulp by one of the conventional processes. Still other mills use regular globe rotary digesters for the caustic reaction in a batch operation, followed by the Celdecor chlorine reaction tower for bleaching.

#### 4. The Morley Process

The Morley Continuous Process, using the Morley pulper, was developed in England for continuous cooking of straw, bagasse, and other agricultural residues. It has been used in commercial operation for about five years for production of semi-pulp suitable for corrugating board, chip board and wallboard. The Morley pulper is now being manufactured in the U. S. by Paper and Industrial Appliances.

The process is essentially a continuout soda or sulfate process in which a horizontal digester is operated at atmospheric pressure. The cut straw or bagasse fiber is fed continuously to the screw in the first of a series of long horizontal digestion tubes. The caustic soda or sulfate cooking liquor is also added at the entrance to this tube so that the straw is impregnated thoroughly with liquor before the steam is added. The liquor ratio is about 4 to 1.

The screw inside the tube conveys the treated fibre to the end of the first tube from which it is dumped into a tube hopper. From this it enters the second tube digester and continues on from tube to tube until it reaches the end of the last tube. The number of tubes depends entirely upon the length of reaction time desired and the product being produced. Live steam is added in each of the digestion tubes to maintain the desired cooking temperature.

This method has been successful for production of rough grades of board but it has not been used commercially for production of bleached pulp. It seems entirely possible that it could be modified so as to be suitable for production of bleached pulp from bagasse.

#### 5. The Kamyr Process

The Kamyr continuous cooking system has been used with good success in the Scandinavian countries for cooking wood chips. In this system a vertical cylindrical digester is used. This digester is about 6½ feet in diameter and about 60 feet high. In cooking wood chips, a liquor recirculation system is used, and the actual digestion is carried out at high pressure as the chips travel down through the digester.

Recently, a modification of the Kamyr Process has been proposed for production of bleached pulp from bagasse and straw. One of the most modern straw pulp mills in Italy is in the process of installing one of these units for large scale runs. If it proves to be successful for production of bleached straw pulp it should be equally as successful for production of bleached pulp from bagasse fiber. It has also been reported that three of these units are being installed, for production of straw pulp, in various parts of France.

### Summary and Conclusions

1. It has been pointed out that for production of high quality products from bagasse, it is essential that the pith be removde from the fiber.

2. Once the pith is removed, there are no technical difficulties in using the bagasse fiber for production of high quality bleached pulp.

3. Processes now being used for producing bleached straw pulp are equally suitable for bagasse.

4. The alkaline processes, the monosulphite process or variations of these processes are considered more suitable than the acid sulphite processes.

5. High quality pulp can be produced by either batch type processes, or continuous processes.

6. Choice of process depends greatly upon economic conditions existing at the mill site.

7. In spite of the number of mills scattered over the world which are

*(Continued on page 35)*

# PRICES

**The prices below reflect market quotations in New York at the mill level on standard grades. Does not include spot offerings.**

## PAPER AND BOARD

**Standard News, Delivered Ports**
Rolls, contract, per ton .....‡ $116.00/$126.00
Sheets ..... 131.00/ —

**Kraft**—per cwt. 50# base wgt. OPS Ceiling CPR 88
F.o.b. Southern & Western integrated mills. C.l. Freight allowed up to $10 a ton.

| | |
|---|---|
| Standard Wrapping, ctr. rolls .. | $7.75/ — |
| Butchers, counter rolls ..... | 8.25/ — |
| Standard Bag, mill rolls ..... | 7.50/ — |
| Shipping Sack, mill rolls ..... | 7.75/ — |
| Gumming, mill rolls ..... | 8.00/ — |
| Asphalting, mill rolls ..... | 7.75/ — |
| Envelope, Sub. 20, mill rolls .... | 9.25/ — |

**Tissues**—per ream 24x36 (480) 10 lbs.
2500 lbs. or more

| | |
|---|---|
| Wh. No. 1 Frd. ..... | $1.90/$2.05 |
| Wh. No. 1 MG ..... | 1.90/ 2.05 |
| Wh. No. 1½ ..... | 1.80/ 1.90 |
| Wh. No. 2 ..... | 1.60/ 1.65 |
| Kraft Anti-Tar 20-30 ..... | 1.90/ — |
| White Anti-Tar 20-30 ..... | 2.20/ — |

**Toilet**— per case of 100 rolls—1M sheets

| | |
|---|---|
| Unbleached 4½x4½ ..... | $8.00/$8.25 |
| Unbleached 4½x5, 650 sheets .... | 6.65/ — |
| Bleached 4½x4½ ..... | 10.00/12.50 |
| Bleached 4½x5 ..... | 9.81/10.14 |

Per Case of 50 rolls—2000 sheets

| | |
|---|---|
| Unbleached 4½x4½ ..... | $8.00/$9.75 |
| Bleached 4½x4½ ..... | 6.95/ — |

Per Case of 100 rolls—1000 sheets

| | |
|---|---|
| Facial, 4½x4½, 2 ply ..... | $8.95/10.37 |
| 4½x5, 2 ply ..... | 10.25/10.75 |

**Paper Towels**—per case of 3750

| | |
|---|---|
| Wh. Jr. M'tif'd 9⅛x9½ ..... | $6.40 |
| Br. Sr. M'tif'd 9⅞x12 ..... | 4.40 |
| Br. Jr. M'tif'd 9½x9⅞ ..... | 3.90 |
| Br. Jr. Sgl. fold 9⅞x10¾ ..... | 3.95 |
| C-Fold 10⅛ min. x 14 max. ..... | 5.90/ 6.64 |
| Blchd. 7½x11, 48/50 rolls ..... | 6.80/ 7.92 |

**Manila**, per cwt.

| | |
|---|---|
| No. 1 Jute Tag, 100-lb., sheets... | $20.55/22.55 |
| Reg. Jute M.F. 40-lb., sheets.... | 19.50/21.50 |
| Printing Manila ..... | 12.00/ — |

**Gummed Tape**—per bdl., 500 bdls. or more

| | |
|---|---|
| 90-lb. 375 ft. GSI ..... | $7.20 / — |
| 60-lb. 600 ft. GSI ..... | 7.20 / — |
| 35-lb. 800 ft. GSI ..... | 8.28 / — |
| 35-lb. 500 ft. GSO ..... | 6.21 / — |

## MARKET WOOD PULP

**Second Quarter Contract Prices. Per Short Air-Dry Ton**

| | Varying freight allowances *U.S. | Canadian | On Dock Atlantic Ports Swedish | Finnish | Norwegian |
|---|---|---|---|---|---|
| Groundwood ..... | $92.50/ — | ‡$78.00/ 95.00 | | | |
| Sulfate, Bleached ..... | 145.00/ — | 190.00/ — | $180.00/185.00 | | $180.00/ — |
| Semi-bleached Sulfate . | 140.00/ — | | | | |
| Sulfate, Unbl. ..... | 120.00/132.50* | 135.00/170.00 | 145.00/ — | 145.00/ — | |
| Sulfite, Blchd. ..... | 140.00/ — | 140.00/160.00 | 175.00/180.00 | 175.00/ — | 175.00/ — |
| Sulfite, Unblchd. ..... | 132.50/ — | 150.00/162.50 | 155.00/160.00 | 155.00/ — | |
| Sulfite, Unbl'd (Glassine) | | 164.00/ — | 160.00/ — | | |
| Soda, Blchd. ..... | 140.00/ — | 155.00/ — | | | |
| Sulfite Screenings ..... | 72.50/ — | | | | |
| Sulfate Screenings .... | 67.50/ — | | | | |
| Groundwood Screenings . | 60.00/ — | | | | |
| Unblchd Sulfate Sideruns | 132.50/ — | | | | |
| Stand. News. Sideruns.. | 92.50/ — | 87.50/ — | | | |

* OPS Ceiling, CPR 49 ‡ F.o.b. Shipping Point.

**Boards** Deld., per ton (10 tons or over) CPR 108

| | |
|---|---|
| Filled News ..... | $95.00/110.00* |
| Plain Chip ..... | 95.00/105.00* |
| Blchd. Mla. L-d. Chip ..... | 150.00/ — |
| White Pat. coated .020 ..... | 175.00/ — |
| Kr. Liner 42 lb. M sq. ft. $2.47 | 117.50/ — |
| Kr. Corr. .009 M sq. ft. $1.59 | 122.50/ — |
| Binders Boards ..... | 137.50/140.00 |

The following prices are representative distributors' resale prices:

**Rag Content Bonds and Ledgers—**
White, 20 lb.

| Bonds | 4 Ctns. per cwt. |
|---|---|
| 100% Rag Ex. No. 1 ..... | $70.45/$75.90 |
| 100% Rag ..... | 62.65/ — |
| 75% Rag ..... | 48.15/ — |
| 50% Rag ..... | 38.90/ — |
| 25% Rag ..... | 31.65/ 33.00 |

| Ledgers | 4 Ctns. per cwt. |
|---|---|
| 100% Rag Ex. No. 1 ..... | $72.65/$72.80 |
| 100% Rag ..... | 63.90/ — |
| 75% Rag ..... | 49.10/ — |
| 50% Rag ..... | 40.20/ — |
| 25% Rag ..... | 33.00/ 34.30 |

**Sulphite Bonds and Ledgers**
White, 20 lb.

| Bonds | 4 Ctns. per cwt. |
|---|---|
| Watermarked ..... | $19.00/$20.9 |
| Plain ..... | 18.40/ 19.9 |

| Ledgers | 4 Ctns. per cwt. |
|---|---|
| Watermarked ..... | $20.30/$21.8 |
| Plain ..... | 19.35/ 20.8 |

**White Book**

| Conversion Coated | Case per cwt. |
|---|---|
| No. 1 ..... | $23.90/$24.6 |
| No. 2 ..... | 22.40/ 22.8 |
| **Machine Coated** | |
| Extra No. 1 ..... | $21.35/$21.6 |
| No. 1 ..... | 19.15/ 19.6 |
| No. 2 ..... | 16.65/ 17.4 |
| **Uncoated** | |
| No. 1 Antique (Watermarked) ... | $19.15/$19.6 |
| Offset ..... | 18.15/ 19.1 |
| A Grade E. F. ..... | 18.40/ 18.6 |
| A Grade S. C. ..... | 18.90/ 19.1 |
| B Grade E. F. ..... | 17.40/ 18.1 |
| B Grade S. C. ..... | 17.90/ 18.6 |

‡ Indicates a price change.

## WASTE PAPER MARKET

**Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) These quotations are a partial indication of the price range in each market on the date specified, as gathered from major dealers. ALL PRICES ARE STRICTLY NOMINAL.**

| | New York June 16 | Philadelphia June 12 | Boston June 12 | Chicago June 3 |
|---|---|---|---|---|
| No. 1 Mixed Paper ..... | nominal | nominal | $7.00/ — | $8.00/ — |
| No. 1 News ..... | $8.00/ 10.00 | nominal | 9.00/ 12.00 | 12.00/ — |
| Over-issue News ..... | 18.00/ 19.00 | nominal | 12.00/ 14.00 | 15.00/ — |
| Mill Wrappers ..... | 8.00/ 12.00 | nominal | 13.00/ 19.00 | 11.00/ — |
| Corrugated Containers ..... | 10.00/ 11.00 | nominal | 12.50/ 13.00 | 14.00/ — |
| Double Kraft Ld. Corr. Cuts .. | 30.00/ 37.50 | 25.00/ 37.50 | 25.00/ 40.00 | 35.00/ 37.50 |
| 100% Kraft Corr. Cuts ..... | 40.00/ 55.00 | 40.00/ 55.00 | 45.00/ 55.00 | 55.00/ — |
| Used Sugar & Flour Bags .. .. | 35.00/ 45.00 | 25.00/ 35.00 | 25.00/ 35.00 | 30.00/ — |
| Super Resorted Br. Kraft ..... | 35.00/ 45.00 | 25.00/ 40.00 | 20.00/ 35.00 | 30.00/ — |
| New Br. Kraft Env. Cuts ..... | 60.00/ 70.00 | 65.00/ 75.00 | 55.00/ 65.00 | 70.00/ — |
| New Br. Kraft Cuts ..... | 60.00/ 65.00 | 55.00/ 70.00 | 45.00/ 55.00 | 60.00/ — |
| No. 1 Gdwd. Shvs. ..... | 20.00/ 30.00 | 20.00/ 30.00 | 28.00/ 30.00 | 22.00/ — |
| White Newsblanks ..... | 50.00/ 65.00 | 60.00/ 70.00 | 40.00/ 50.00 | 45.00/ — |
| No. 1 Flyleaf Shvs. ..... | 45.00/ 50.00 | 25.00/ 40.00 | 25.00/ 42.50 | 30.00/ — |
| No. 1 Soft Wht. Shvs. ..... | 75.00/ 85.00 | 70.00/ 85.00 | 75.00/ 85.00 | 75.00/ — |
| Super Soft Wht. Shvs. ..... | 85.00/ 95.00 | 85.00/ 95.00 | 95.00/100.00 | 85.00/ — |
| Hd. Wht. Shvs. ..... | 87.50/105.00 | 105.00/115.00 | 85.00/100.00 | 90.00/ — |
| Hd. Wht. Env. Cuts ..... | 110.00/125.00 | 120.00/130.00 | 105.00/115.00 | 100.00/ — |
| New Manila Env. Cuts ..... | 60.00/ 70.00 | 75.00/ 85.00 | 60.00/ 70.00 | 40.00/ — |
| Col. Tab. Cards ..... | 35.00/ 42.50 | 40.00/ 45.00 | 40.00/ 50.00 | 35.00/ — |
| Manila Tab. Cards ..... | 60.00/ 65.00 | 65.00/ 70.00 | 60.00/ 65.00 | 60.00/ — |
| No. 1 Mixed Ledger ..... | 35.00/ 37.50 | 35.00/ 40.00 | 35.00/ 45.00 | 35.00/ — |
| White Ledger ..... | 45.00/ 50.00 | 55.00/ 60.00 | 50.00/ 55.00 | 50.00/ — |
| No. 1 Book & Mag.† ..... | 20.00/ 22.00 | 20.00/ 25.00 | 20.00/ 25.00 | 15.00/ — |
| No. 1 Rep'd. Hvy. Books‡ ..... | 35.00/ 40.00 | 35.00/ 40.00 | 30.00/ 37.50 | 27.50/ — |

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood. § Deld.

## RAG MARKET

**New Domestic Cotton Cuttings**
OPS Ceiling Price, CPR 28 *
Delivered Mill Basis

| | |
|---|---|
| No. 1 White Shirts ..... | $16.00/$21.00* |
| No. 1 Unblchd. Muslins ..... | 16.00/ 21.00* |
| Blchd. & Unblchd. Underwears .. | 17.00/ 21.00* |
| Blchd. Canton Flannels ..... | 15.50/ 21.00* |
| No. 1 Light Silesias ..... | 13.25/ 16.00* |
| No. 1 Light Prints ..... | 8.75/ 11.50* |
| No. 1 Blue Overalls ..... | 11.75/ 14.50* |
| Suntan Khakis ..... | 9.00/ 11.50* |
| Fancy Shirts ..... | 7.75/ 10.00* |
| Indigo Blues ..... | 7.50/ 10.00* |
| Mixed Khakis ..... | 6.00/ 8.00* |
| Corduroys ..... | 7.00/ 8.00* |
| Cottonades ..... | 6.75/ 8.00* |
| No. 1 Washables ..... | 5.25/ 6.50* |

**Old Domestic Cotton Rags**
**(Prices to Dealers, F.o.b. Ship. Pt.)**

| | Per 100 lbs. |
|---|---|
| Mixed White ..... | $4.00/$4.50 |
| Cotton Pants & Overalls ..... | 3.00/ 3.50 |
| Thirds and Blues, Repacked ..... | nominal |
| No. 1 Roofing Rags ..... | 1.00/ 1.10 |
| No. 2 Roofing Rags ..... | .90/ 1.00 |

**Bagging**
**(Prices to Dealers, f.o.b. N Y )**

| | Per 100 lbs. |
|---|---|
| Foreign Gunny ..... | $4.75/$5.25 |
| Heavy Wool Tares ..... | 5.00/ 5.25 |
| Foreign Scrap Burlap ..... | 3.75/ 4.00 |
| Austr. Wool Pouches ..... | 6.00/ 7.00 |
| Domestic Manila Rope ..... | 8.00/ 8.75 |
| No. 1 Sisal Strings ..... | 7.00/ 7.50 |

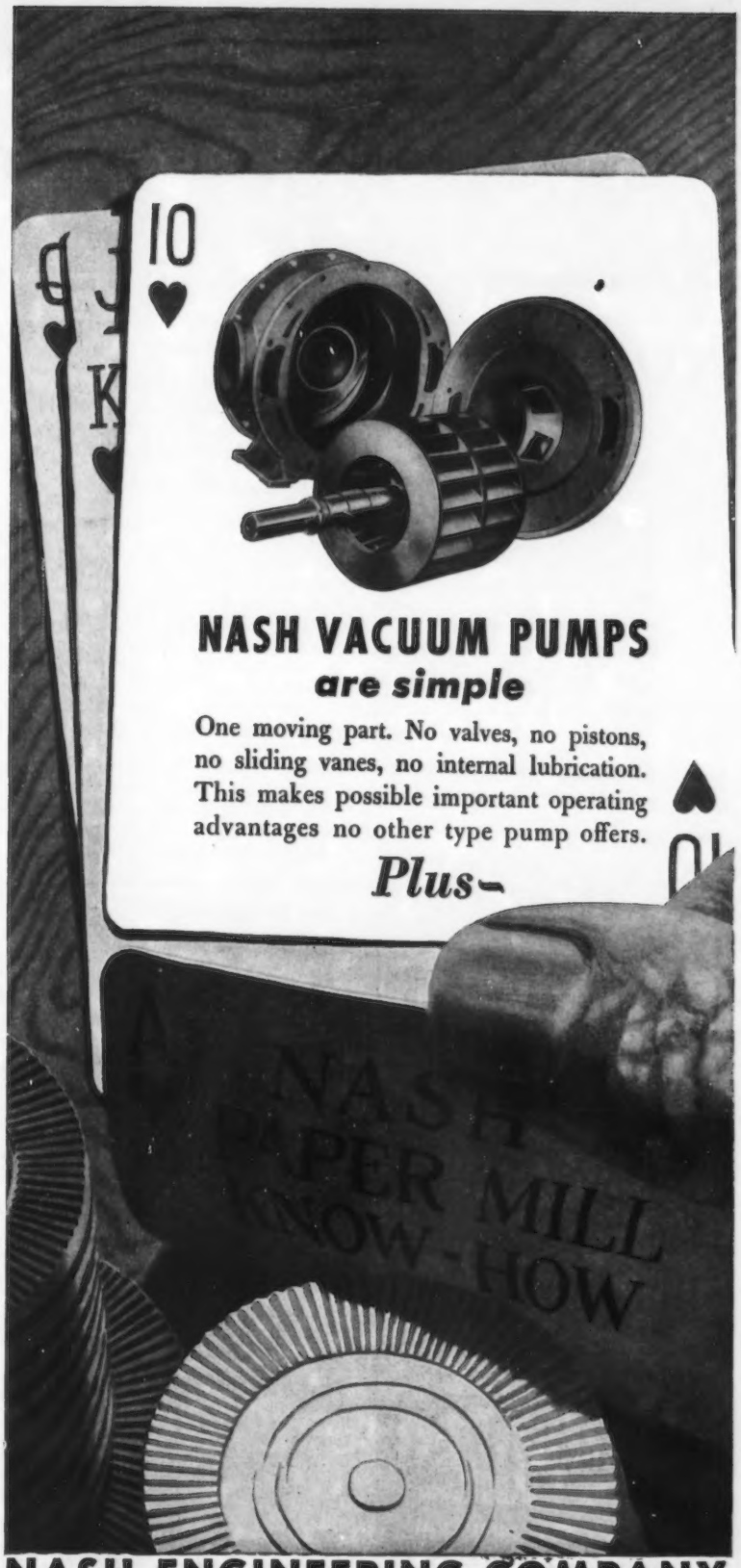
## COTTON LINTERS

**Memphis Market**
F.o.b. Oilmills

| | | cents per lb. |
|---|---|---|
| Grade 2 | 1st cut ..... | 13.00/ 11.50 |
| 3 | | 11.25/ 9.50 |
| 4 | | 9.00/ 8.25 |
| 5 | 2nd cut ..... | 8.00/ 7.75 |
| 6 | | 7.50/ 7.00 |
| 7 | | 7.00/ 7.00 |

# MATERIAL PRICES

| | | |
|---|---|---|
| **Aluminum sulfate:** | | |
| coml. bags, wks.....cwt. | 1.65 | |
| iron-free, c.l. ..... | 3.25 | |
| **Alcohol, ethyl:** | | |
| tax free, dms. c.l.....gal. | 1.01 | / 1.05½ |
| deld. East Miss. | | |
| **Alcohol, methyl:** | | |
| Synthetic, Zone 1, dms. c.l. ht. alld.....gal. | .44 | |
| **Casein, acid prec.:** | | |
| dom. sh. pt. c.l. .....lb. | .27 | / .37½ |
| imp. ex. dock .....lb. | .15 | / .21 |
| **Caustic soda:** | | |
| c.l. wks. solid, 76% cwt..... | 3.35 | |
| flak. & grd. 100-lb. drums... | 3.75 | |
| liquid 50% tanks.... | 2.55 | |
| liquid 70% tanks.... | 2.65 | |
| **China clay:** | | |
| dom. air-float. c.l. wks. ton | 10.00 | |
| water-washed, lump. filler.... | 11.00 | |
| coating ..... | 17.60 | /30.50 |
| imported, ex whse...short ton | 15.20 | /28.35 |
| **Chlorine:** | | |
| single-unit tanks, works..cwt. | 2.70 | |
| multi-unit .....cwt. | 3.20 | / 4.40 |
| **Formaldehyde:** | | |
| USP, inh. dms, c.l. wks....lb. | .0625/ | .0675 |
| l.c.l., E. wks..... | .0675/ | .0725 |
| **Fuel oil:** | | |
| Bunker C, No. 6 Cal. hvy. tanks, refinery ..... bbl. | 1.95 | / 2.15 |
| light .....bbl. | 2.00 | / 2.25 |
| **Hydrogen peroxide:** | | |
| USP, 35% cbys. E. of Miss. lb. | .23½/ | .26½ |
| **Lime:** | | |
| hydrated, bags, wks. .....tons | 13.50 | |
| **Rosin:** | | |
| B gum. drms, c.l. Savan..cwt. | 7.00 | / 9.08* |
| K, M, N .....cwt. | 7.20 | / 9.49* |
| FF, wood, do.....cwt. | 4.34 | / — |
| *OPS Ceiling, CPR 52. | | |
| **Rosin size:** | | |
| 70%, gum & pale grds, tank cars, south, sh. pt.....cwt. | 6.30 | / 6.40 |
| **Salt cake:** | | |
| dom. bulk, c.l. wks.....ton | 17.00 | |
| wks. frt. all.....ton | 20.00 | /22.00 |
| **Soda ash:** | | |
| light, 58%, bags, wks..... | 1.50 | |
| bulk ..... .....cwt. | 1.20 | |
| **Sodium silicate, 40°:** | | |
| turbid. c.l. wks.....cwt. | 1.30 | / |
| l.c.l. wks. ..... | 1.60 | / 1.85 |
| **Sodium peroxide:** | | |
| dms. c.l. E. of Miss.....lb. | .21 | |
| l.c.l. do. .....lb. | .21½/ | .22 |
| **Soybean, protein:** | | |
| chem. isol, wks, c.l., bags..lb. Cinn. and Chic. | .25 | / .29 |
| **Sulfuric acid:** | | |
| 60° Be. cbys. c.l. wks.....cwt. | 1.75 | / — |
| l.c.l. wks. ..... .....cwt. | 2.05 | / 2.85 |
| **Sulfur:** | | |
| crude, c.l. mines, contract, long ton | 21.00 | /22.00 |
| f.o.b. vessels Gulf ..... | 22.50 | /23.50 |
| **Sulfur dioxide:** | | |
| liquid, coml. cyl. wks.....lb. | .09 | |
| multi-unit cars .....lb. | .0535 | |
| **Starches:** | | |
| pearl corn, bags, c.l. wks...cwt. | 6.59 | / — |
| white dextrines, c.l. wks...cwt. | 7.97 | / — |
| potato, Idaho, c.l. wks....cwt. | nominal | |
| potato, Maine, c.l. wks... cwt. | nominal | |
| tapioca, conv. dextrines...cwt. | 8.50 | / 9.00 |
| **Talc:** | | |
| domestic, 50-lb. sacks, c.l. wks. .....ton | 25.00 | /30.00 |
| **Titanium dioxide:** | | |
| anastase, c.l. deld., bags...lb. | .21 | / .21½ |
| l.c.l. deld. .....lb. | .22 | / .22½ |
| rutile, c.l. deld. .....lb. | .23 | / .23½ |
| l.c.l. deld. .....lb. | .24 | / .24½ |


**NASH VACUUM PUMPS**
***are simple***

One moving part. No valves, no pistons, no sliding vanes, no internal lubrication. This makes possible important operating advantages no other type pump offers.

***Plus—***

**NASH ENGINEERING COMPANY**
**415 WILSON AVE., SO. NORWALK, CONN**

PULP
PAPER

NORDICUS
INCORPORATED
500 FIFTH AVENUE
NEW YORK 36, N. Y.

SELLING
AGENTS

# Condensations of Papers Australian Technical Conference, 1952

*Continued from June 13 Issue*

## REACTIVITY OF WOOD CELLULOSE TREATMENT WITH DILUTE SULPHURIC ACID AT ELEVATED TEMPERATURES

**D. H. Foster**

Holocellulose prepared from samples of *Eucalyptus regnans* F. v. M. wood, and bleached eucalypt soda pulp were hydrolysed at 160°C. with 2 percent sulphuric acid in a percolation apparatus, and the rate of cellulose hydrolysis was followed by determining residue weights after various hydrolysis periods. Samples from various portions of *E. regnans* trees were observed to hydrolyse at different rates, but the only appreciable differences were those between tension wood and normal wood cellulose. The former hydrolysed much more slowly than the latter and this is correlated with the high degree of lateral order observed in the former by means of powder X-ray diffraction photographs, and is taken to support the previously proposed hypothesis that rate of hydrolysis is a function of crystallite size. In one case the rate of hydrolysis of tension wood cellulose was approximately the same as that of cotton cellulose.

TABLE II

Relationship between X-ray Results and Hydrolysis Rate

| | First order reaction constant $k \times 10^{-4}$ for hydrolysis at 160°C. with 2% $H_2SO_4$ | Reciprocal of line breath of 002 line at half maximum intensity |
|---|---|---|
| Normal wood B ..... | 58 | 0.228 |
| Tension wood B ..... | 24 | 0.350 |
| Cotton* ..... | 22 | 0.435 |
| Wood from a young tree* | 56 | 0.226 |

* Foster and Wardrop (1).

TABLE I

HYDROLYSIS RESULTS
with 2% $H_2SO_4$ at 160°C.

All results expressed as percentage of extractive-free material except where otherwise stated.

| | Holocellulose yield: by chlorite method, percent | Holocellulose yield: by chlorine method, percent | First Order Reaction Constant $k \times 10^{-4}min.^{-1}$ | Resistant Cellulose by extrapolation of hydrolysis graphs, percent | α-cellulose percent |
|---|---|---|---|---|---|
| Tree 39-3 Butt ..... | | 78.8 | 58 | 50 | |
| Centre ..... | | 79.7 | 48 | 50 | |
| Top ..... | | 81.1 | 47 | 48 | |
| Tree 39-5 Butt ..... | 80.6 | 80.2 | 52 | 45 | 45.2 |
| Centre ..... | 82.3 | 81.8 | 60 | 50 | 45.4 |
| Top ..... | 82.3 | 81.3 | 58 | 47.5 | 46.9 |
| Tree 41-1 Butt ..... | 80.5 | | 55 | 49 | 50.7 |
| Tree 36-2 Butt ..... | 81.9 | | 56 | 48 | 49.5 |
| Tree 36-4 Butt ..... | 81.1 | | 58 | 45.5 | 48.4 |
| Tree 39-5 (top) early wood .. | ø81.7 | | 43 | 42.5 | |
| late wood ... | ø84.7 | | 54 | 55 | |
| Tension wood A ..... | ø82.9 | | 37 | 50 | |
| Normal wood B ..... | ø77.3 | | 53 | 41 | |
| Tension wood B ..... | ø84.7 | | 24 | 51 | |
| Normal wood B ..... | ø76.2 | | 58 | 34.5 | |
| Eucalypt soda pulp (species not known) unbeaten ..... | | | 46 | 86.5 | |
| Beaten 500 rev. in Lampen mill | | | 44 | 87.5 | |
| Beaten 18,000 rev. in Lampen mill ..... | | | 45 | 90 | |
| Wood from young tree* ..... | | 79.1 | 50 | 46 | 44.9 |
| Cotton* ..... | | | 22 | 90 | |

ø Results expressed as percentage of original unextracted wood.
* Results taken from Foster and Wardrop (1).

MERKOR
Non-Returnable, Durable standard mill core.

GARTEX
Returnable and Non-Returnable extra strong mill core for regular and special needs.

ANY LENGTH, DIAMETER AND THICKNESS

*Write for samples and prices*

MERCER
PAPER TUBE, INC.
655 WEST INGHAM AVE.
TRENTON, NEW JERSEY
NEW YORK OFFICE—500 5th AVE.

The bleached eucalypt soda pulp was hydrolysed before and after beating for 4,500 and 18,000 revolutions in a Lampen mill. No differences in rate of hydrolysis were observed and from this it is concluded that no new cellulose crystallite surfaces were formed during beating, and that swelling must have taken place in the amorphous cellulose and hemicellulose portions of the pulp.

Values were obtained for the amounts of resistant cellulose in the samples by extrapolation of the hydrolysis graph to zero time, and these results are compared in some cases with those of α-cellulose determinations.

## YACCA RESIN—ITS USE AS A PAPER SIZING AGENT

### H. A. Reid

After a preliminary outline of the purpose of sizing and the types of materials commonly used, a description of the resin is given. The plant from which it is derived is widespread in Australia, and is commonly known as the "grass-tree" or "black boy." Botanically, the plant may be one of several species of *Xanthorrhoea*. Most of the Australian production comes from South Australia or from nearby islands.

Methods of recovering the resin and its main physical and chemical properties are described, followed by an outline of means adopted at Maryvale to prepare size solution by interaction of the resin and caustic soda.

Yacca resin size has been used at Maryvale to replace rosin both to assist fibre recovery at the Adka saveall and to size the paper. Comments are made on the effects of such replacement on operation and on the finished product. The yacca resin is about 70 percent as effective as rosin on the "as received" basis for use in the paper mill. No serious operating difficulties were encountered in its use. No significant change in alum usage is required when yacca size replaces rosin size.

At present, for comparable sizing, price slightly favors yacca resin, but its price has increased from about £11 per ton in 1945 to £50 per ton in 1951.

Since the resin is highly colored, its use is restricted. On kraft wrapping papers, etc., color is not perceptibly affected. Investigation is still needed to determine optimum conditions for sizing and the machine variables affecting water resistance of the yacca-sized paper.

## SODA PULPING OF EUCALYPTUS GIGANTEA

### C. H. Turner

This paper presents the results of studies on the soda pulping of *E. gigantea*. Four series of pulps (10, 15, 20 and 35) were prepared by cooking at 170°C., in each series permanganate number was kept constant at different

Cloth Inspector Dyer Executive Machinist Office Worker Spinner Twister Warp Dyer Weaver Winder

# Workers *Like These* at AVONDALE MILLS

## Can Help Your Plant Succeed in the Birmingham District

COMPETENT, cooperative working men and women—largely native born—have played a major role in the success and growth of many Alabama industries.

Avondale Mills is one notable example. This Company was founded in 1897 with a very small capital investment by the late Governor B. B. Comer. Avondale Mills today has a corporate worth of over $25,000,000. Its twelve plants in seven Alabama towns spin and weave one-fifth of Alabama's cotton crop into many fabrics marketed throughout the world.

Answering the question: "What's the mainspring of Avondale's great growth?" President Craig Smith says:

**"Our loyal and efficient personnel. Those pictured here are a representative cross section of our six thousand employees. Friendly cooperation of the people in our several communities and the fair treatment we have received from government at all levels have likewise contributed importantly to the success of Avondale Mills in Alabama."**

Within the past few years many textile mills have come to Alabama. There are opportunities today for many more—especially in the Birmingham area with its large reserve of women workers who want jobs now. We invite you to investigate.

**BIRMINGHAM COMMITTEE OF 100**

1914 Sixth Ave., N., Birmingham, Ala.

**Executive Committee**

**Gordon Persons**
Governor
State of Alabama

**Bradford C. Colcord**
President
Woodward Iron Co.

**John S. Coleman**
President
Birmingham Trust National Bank

**Donald Comer**
Chairman of the Executive Committee
Avondale Mills

**William P. Engel**
President
Engel Companies

**W. W. French, Jr.**
President
Moore-Handley Hardware Co.

**Clarence B. Hanson, Jr.**
Publisher
The Birmingham News

**W. H. Hoover**
President
Employers Insurance Co. of Alabama

**Claude S. Lawson**
President
Sloss-Sheffield Steel & Iron Co.

**Thomas W. Martin**
Chairman of the Board
Alabama Power Co.

**J. C. Persons**
President
First National Bank

**O. W. Schanbacher**
President
Loveman, Joseph & Loeb

**Mervyn H. Sterne**
Sterne, Agee & Leach

**A. V. Wiebel**
President
Tenn. Coal & Iron Div.
United States Steel Co.

cooking times (0.125 hours to 6 hours) by varying the soda charge to suit the cooking time chosen; for example, the following conditions were used to prepare pulps with permanganate numbers of 15.

| | | | | | | |
|---|---|---|---|---|---|---|
| Cooking time (hours) ..... | 0.125 | 0.5 | 1.0 | 2.0 | 4.0 | 6.0 |
| Soda charge (% $N_2OH$/o.d. wood) .... | 100.0 | 35.8 | 26.3 | 21.8 | 19.5 | 18.7 |

For each series, the effect of changing the cooking time and soda charge on yield of unbleached pulp, apparent D.P. (after sodium chlorite treatment), actual bleach demand to brightness 80 and the retention time necessary to exhaust this amount of bleach were determined.

The results show that at each permanganate number level, highest D.P. and lowest bleach demand and retention time occur when cooking time used is between 0.5 and 1.0 hour. On the other hand, the highest yield is obtained when cooking time is from two to three hours. As cooking time increases from 0.5 to 6 hours, the D.P. of the pulp at any one permanganate number decreases steadily while bleach demand and retention time increase.

The use of very high soda charges which are necessary for cooks of less than 0.5 hours, leads to a marked reduction in yield and severe degradation as indicated by D.P. determination. In addition a pink coloration appears and this is difficult to bleach — thus bleach demand and retention times for these pulps are relatively high.

Permanganate number for these laboratory cooked pulps is shown to be directly proportional to bleach demand (single stage hypochlorite treatment) only when the cooking time is constant, and as cooking time is increased the ratio chlorine requirement to permanganate number increases.

Relationships presented earlier between soda charge, cooking time and permanganate number have been confirmed and extended by this work.


*The Controlled Flow*

**VICTORY BEATER**

**is manufactured by**

**THE NOBLE & WOOD MACHINE CO.**

*Paper Mill Machinery*

**Hoosick Falls • New York • U. S. A.**

**CAMBRIDGE SURFACE PYROMETER**

The extension model provides temperature determination of even inaccessible rolls, quick and easy.

*Send for Bulletin 194 SA*

**CAMBRIDGE INSTRUMENT CO., INC.**

3702 Grand Central Terminal, New York 17, N. Y.

Pioneer Manufacturers of Precision Instruments



**A. M. MEINCKE & SON**

INC.

**Materials for Paper Making**

7 SO. DEARBORN ST.
CHICAGO, ILL.


## FIELDEN DRIMETER FOR CONTINUOUSLY INDICATING MOISTURE CONTENT OF PAPER


**V. J. McConchie**


The Fielden Drimeter has been successfully used several years to indicate the moisture content of textiles following their drying process, which is carried out on a cylinder machine in essentially the same way as paper is dried on a paper machine. The instrument, an electronic capacitative one, it was found, required some modifications before it could be satisfactorily applied to a paper machine. The paper machine on which the instrument was tried was the No. 2 machine of Australian Paper Manufacturers Ltd. Fairfield, which makes a variety of kraft papers at speeds up to 800 ft./min. and over a range in substance of 16 to approximately 60 lb. D. C. 480.

The paper gives circuit details and a description of the instrument as used in the experimental work, and also details of a recently developed modified Drimeter, which will be the form of future instruments. The details of the new instrument have only just come to hand in Australia.

The difficulties encountered whilst applying the Drimeter to a paper machine are described. Instability, distortion of the electrodes for various reasons, effect of sheet tension, sheet weight variation, etc., were all factors contributing to inaccurate readings from the instrument. The steps taken to eliminate their effects by designing a suitable mounting, determining optimum sensitivity of the instrument, providing guide arms for the paper, etc., are given.

Correlation checks between the instrument reading and oven-drying gravimetric tests were carried out. The method for calibration and correlation performed whilst the instrument was operating on the machine is given.

Further work remains to be done on the effect of furnish variations but now that mechanical defects appear to have been overcome, this should be fairly straightforward. Ideas for a number of improvements to the instrument are advanced and a suggestion to incorporate a weight correcting instrument with a Drimeter type is made.

It will be necessary to correct the Drimeter for every $\pm$ 2½ percent change in weight to obtain an accuracy of at least $\pm$ 0.5 percent in the reading of the instrument, but this should present no difficulties as the necessary adjustments may be made by quick reference to a Calibration Unit in the circuit.

Overall the results from the instrument appear very promising and with the proposed modifications it is hoped that a satisfactory continuous record of off-machine moisture will be obtained for control purposes.

## VARIATION IN PROPERTIES OF PULP FROM SUCCESSIVE GROWTH RINGS OF PINUS RADIATA D. DON


**A. J. Watson, A. B. Wardrop, W. E. Cohen and H. E. Dadswell**


Plantation grown *Pinus radiata* D. Don has attracted the attention of the Australian pulp and paper industry in recent years as a source of long-fibered pulp. As much of the timber available for pulping will be from young trees an investigation was directed towards those features in which the young material differs from the mature wood and which may influence the resultant pulp.

In successive growth rings from the stem center the fiber length increases and is accompanied by a decrease in the angle of inclination of the cellulose micelles to the fiber axis (spiral angle), so that each successive growth ring provides material of increasing fiber length and changes in cell wall structure. Advantage was taken of this to ascertain the influence of fiber length, cell wall structure and composition on the pulping and paper making properties of *P. radiata*.

One-inch disks were cut from the butt log section of a twelve-year old tree, and the growth rings were separated. The wood from each growth ring was converted into chips 2.5 cm. in length and 4 mm. x 4 mm. in cross section. Chips from each ring were cooked by the kraft process to a per-

manganate number of 25. The desired permanganate number was obtained by varying the cooking time, all other cooking conditions being maintained constant throughout.

The average tracheid length increased from 1.6 to 3.1 mm. from pith to bark while the spiral angle decreased from 39° to 15°. Most of the change in length and spiral angle took place over the first 6–7 growth rings.

Pulps from each growth ring were evaluated in the unbeaten state and after beating in the Lampen mill. Bursting and tensile strengths showed a small increase from pith to bark, tear increased rapidly and then fell away after the eighth growth ring while bulk and stretch showed a marked increase and decrease respectively for the first eight rings and then became practically constant. Air resistance showed the most marked change, dropping from 81 seconds for the unbeaten sheets from the second growth ring to 2–8 seconds for the seventh and successive growth rings. Freeness measurements and fiber examination indicated that the outer rings beat more readily. The factors responsible for the changes in the strength properties of the test sheets from the pulp from the various growth rings will be discussed in the full paper.

Pulp yield and cooking time for a given permanganate number showed a decided trend from pith to bark, the former increasing from about 40 percent to 50 percent, and the latter decreasing from 4.4 hours to 2.8 hours until the eighth growth ring and then remaining fairly constant.

It is evident that the utilization of young material will present problems due to the lower yield and strength properties, longer pulping time and the very high air resistance to be expected with pulps prepared from material 4–5 years old.

## A MATHEMATICAL TREATMENT OF THE FRICTIONAL LOSSES DUE TO FLOW OF STOCK

### Z. J. Majewski

Many curves showing the head loss due to the velocity of flow of stock in pipes are available and are of the same general shape. All these curves show that as the velocity increases, the head loss increases until a point is reached where a so far unexplained inflection occurs such that the head loss decreases as the velocity increases. Finally, the head loss increases at a rate generally similar to that for water.

If the head loss and velocity are plotted on log-log paper the first portion of the curve appears as a straight line and the following considerations are limited to this portion only. As present practice is almost always to pump stock with a velocity smaller than that corresponding with the inflection this limitation is of little consequence.

Brecht and Heller carried out very thorough research over a wide range of stocks and this paper is based mainly on their results.

For various stock concentrations the straight lines formed when the logarithm of the head loss is plotted against the logarithm of velocity are merely shifted up or down and remain parallel. Therefore, the conclusion may be drawn that the head loss for any given concentration is proportional to $V^a$ where V stands for velocity and "a" for the tangent of the angle between the parallel lines and the velocity axis.

If the head loss is plotted against concentration on log-log paper with velocity as parameter, a similar series of parallel straight lines is obtained. This means that the head loss is proportional to $S^b$ where S stands for the concentration and "b" for the tangent of the angle between the parallel lines and the concentration axis.

When head loss is plotted against pipe diameter on log-log paper a number of lines is obtained. These lines make an angle of —45° or larger with the pipe diameter axis. Conservative results will always be obtained if it is assumed that the angle is constant at —45° and on this basis the head loss is proportional to the reciprocal of the diameter.

The above three statements may be combined and result in the formula:

$$H = \frac{A\,L\,V^a\,S^b}{D}$$

where H = head loss in feet
L = length of pipe in 100 ft.
D = diameter in pipe in feet
V = velocity in feet per second
S = stock concentration in percentage
A = head loss for V = S = D = L = 1
a, b = exponents for velocity and concentration respectively.

The coefficients A, a and b will vary for different pulps and different freenesses and can only be determined by experiment. The values of the coefficients for eight different pulps are presented and in the case of unbleached sulphite the change in value of the coefficients over the whole range of freeness is followed graphically.

An example indicates that the TAPPI curves were possibly obtained for stock of very low freeness and this could be the reason for the discrepancies between the Brecht and Heller curves and the TAPPI curves.

In the second part of the paper an equation is developed which shows the cost of plumbing based on power, piping and pump costs. It is an equation of two variables, viz., velocity and concentration, and from the equation the velocity for which the costs are a minimum when pumping a stock of given concentration is determined.

Examples based on certain assumed cost factors show that the velocity for stock of concentration 4 percent or higher is of the order of 1 ft./sec. or less. The actual pumping costs for various velocities show that worthwhile savings can be expected if the optimum velocity is used and therefore each specific pumping problem should be examined to determined that optimum velocity.

Further use of the cost equation allows the determination of the concentration as well as the velocity for which the absolute minimum of pumping cost occurs.

## PHOTOELECTRIC BREAK DETECTORS FOR PAPER AND BOARD MACHINES

### D. J. Williams

Photoelectric relays have been used with success as break detectors on paper and board machines and detailed circuits of the photoelectric relays and electronic time delay relays are given. On paper machines the light sources and photocells are so mounted that the light beam strikes the sheet just inside the front edge, thereby affording protection for the tail. The units are mounted at intervals throughout the drier sections, and the sheet is cut automatically at the suction couch in the event of a break. An audible alarm is also sounded, and if desired a new tail may be cut simultaneously. Warning lights at each unit indicate the position of the break, and provision is made in one installation for inspection of the tail as it is being fed through the first two drier sections after a break.

The installations on board machines do not incorporate sheet-breaking or tail-forming devices, since it is customary to make the tail at the location of the break. The system used on these machines permits individual resetting of relays, and this has the advantage of automatically protecting the sheet behind the break, irrespective of where the break occurs.

Periodic maintenance of the units is necessary, particular attention being given to relay contacts. Very little trouble has been experienced with faulty valves, although the units are in continuous service. Spare units are maintained, and replacement can be effected on the run without upsetting the operation of the rest of the system.

## Bagasse Pulping Process

*(Continued from page 29)*

now using bagasse as a raw material, no really modern mass production mill has yet gone into operation for large scale manufacture of high quality pulp and paper from bagasse. Those mills which are in operation are all located in countries which have low labor costs, high tariffs, import restrictions, or shortages of foreign currency. These factors make it possible for pulp and paper mills in these countries to compete in the local markets with low quality products which are sold at high prices. Thus, it is possible for small, inefficient mills to operate successfully. Such mills could not possibly compete on either quality or price if they were located in the U. S. or its territories,

or if they depended upon the United States for markets.

In fact, an analysis of the type operations carried on by commercial mills using bagasse in various parts of the world indicates that not a single one of these mills would have much chance of success if they were operatde in the same manner in the United States.

8. In spite of the above facts, there is no reason whatsoever that large, highly efficient mills cannot be constructed for using bagasse as a raw material. By combining modern U. S. pulp and paper mill engineering experience with technical know-how of European straw pulp manufacturers, a large scale bagasse pulp mill operation in the U. S., Puerto Rico, Cuba, or Hawaii should be highly successful and its costs should be competitive in every way with those mills which use pulpwood.

Furthermore, such a mill could be successful by using well known pulping processes, and without recourse to any of the so-called secret or mysterious processes which have been announced during the past two years.

## NEW PUBLICATIONS

*(Continued from page 20)*

the New in Smelter Fume Control. To be placed on mailing list write American Wheelabrator & Equipment Corp., 1404 South Byrkit St., Mishawaka, Ind.

**Dust and Fume Control.** Catalog No. 72-B. Contains complete Dustube data, specifications and engineering tables. American Wheelabrator & Equipment Corp., 1404 South Byrkit St., Mishawaka, Ind.

**Industry Relies on Dustube for Efficient Dust and Fume Control.** Pictorial record of the accomplishments of the Dustube in solving a variety of problems for leading concerns in a multitude of process industries. American Wheelabrator & Equipment Corp., 1404 South Byrkit St., Mishawaka, Ind.

**Modern Wallboard Manufacture.** Booklet. Describes the manufacture of duo-smooth hardboard and superior building board by the Linzell-Tayler combination process. Tayler Corp., 52 Broadway, New York 4, N. Y.

**Amortization of Defense Facilities.** Book #2813. MAPI research study answering criticisms of special amortization and urging the equity of full allowability as a cost. Machinery & Allied Products Institute, 120 S. LaSalle St., Chicago 3, Ill.

**50", 53½" and 107" Seamless Display Papers.** New Fall catalogue. Butler Paper New York Corp., 655 Madison Ave., New York 21 N. Y.

**Factory Mutual Record.** Bulletin, June 1952 issue. Features; Rolled Paper Storage Does Need Automatic Sprinkler Protection. Associated Factory Mutual Fire Insturance Companies, Factory Mutual Engineering Div., 184 High St., Boston 10, Mass.

**Hercules SS Nitrocellulose.** Booklet. Includes 20 charts which illustrate studies in solubility of SS Nitrocellulose, also new information about the use of SS Nitrocellulose in heat-seal lacquers; aniline inks; and as a shellac modifier. Hercules Powder Co., Cellulose Products Dept., Ninth and Market Sts., Wilmington 99, Dela.

**Electrical Features of Bokaro Station.** (Reprint from Power Engineering). Booklet, by Hrand H. Levonian, Project Engr., The Kuljian Corp., 1200 North Broad St., Philadelphia 21, Pa.

## PEOPLE

**C. W. E. LOCKE,** former manager of the Somass division of MacMillan & Bloedel Ltd. has been appointed general manager of the pulp department with offices at Harmac, B. C. **F. W. Fearman Jr.,** former manager of the Northwest Bay division, will succeed Mr. Locke as manager of the Somass division. **D. F. McCrimmon,** former manager of the Wilson Creek division, has been appointed manager of the Northwest Bay division. **C. M. Wasson** has added the supervision of the Wilson Creek division to his present duties.

**LUCIEN G. ROLLAND** has been named vice-president and general manager of Rolland Paper Co., Ltd., Montreal, Que.


*Paper Chemist*

● With a minimum of three years' experience in the manufacture of paper, to assist in IBM card stock paper program.

Should have a good knowledge of the chemistry of paper, with a degree in chemistry or equivalent practical experience.

Excellent working and living conditions, good salary, moving expenses paid, exceptional employee benefits.

Write, giving full details, including education and experience, to:

R. H. Austin, Personnel Director, International Business Machines Corp. Endicott, New York.



**FOREST PRODUCTS**

**Their Sources, Production And Utilization**

**By A. J. Panshin, E. S. Harrar, W. J. Baker, and P. B. Proctor**

**The American Forestry Series**

**549 pages, illustrated, $6.00**

Here is practical information on the origin, methods of converting, and most profitable use of forest products. This new book brings you the latest techniques in the manufacture and use of wood products—including wood furniture, veneers and plywood, wood fleur, round timbers and railroad ties. It points up recent developments in the production of products derived through chemical processes—including pulp and paper, insulation materials, cellulose, filaments and films, carbonization and destructive distillation of wood. Miscellaneous wood products such as maple sirup and sugar, dyes, tannins, etc. are likewise discussed from the standpoint of efficiency in producing and using.

Turn to this guide when you want valuable data on recent developments in acid stimulation in naval stores operations . . . the use of synthetic resins in plywood manufacture . . . the application of radio frequency to wood gluing and pulping of wood, and many other advances in technology. The technical gases of manufacturing are treated in clear everyday language, and numerous illustrations and charts simplify your understanding of topics discussed.

**New Material on:**

- Thermal and Sound Insulation
- Cellulose Films and Filaments
- Wood Furniture
- Wood Saccharification
- Problems of Wood Waste Utilization

**LOCKWOOD TRADE JOURNAL CO., INC.**

**15 West 47th St.** **New York 36, N. Y.**

**C. M. O'CONNOR** has been elected vice-president of W. C. Hamilton & Sons, Miquon, Pa. In 1932, Mr. Connor went with the Glassine Paper Co. and became Technical Director in 1933. He also directed during this time the Valley Forge Laboratories. In 1944 he became vice-president and general manager of the Glassine Paper Co. He joined Ohio Boxboard Co. in 1948 as Director of Research and Development. In 1949 he came to W. C. Hamilton & Sons, and since has served as Technical Director. Other executives of the company were relected.

**ROLAND THOMAS HANGER** has been named assistant division manager of the Bogota Container Division, of Robert Gair Co., Inc. Mr. Hanger spent six years with the Chatham (N.J.) Container Co., was vice-president and general manager of that company.

**ROBERT FAEGRE,** vice-president, has been appointed chairman of the Executive Research Committee of Minnesota and Ontario Paper Co. This Committee formulates over-all policy and considers and approves all research projects.

**George A. Potts** has been named woods production manager for Ontario-Minnesota Pulp and Paper Co.'s logging operations; **C. W. Roark** has been named general superintendent, woods, Kenora division; **S. N. Golder,** general superintendent, woods, Fort Frances division.

**ROBERT S. YOUNG** will become assistant manufacturing superintendent at Hammermill Paper Co., Erie, Pa., July 1. Mr. Young began his career 33 years ago at Hammermill, having started in the finishing division he now heads. Replacing Mr. Young as superintendent of finishing will be **Adrian Kennedy,** present assistant superintendent. Like Mr. Young, Mr. Kennedy is a veteran Hammermillite, having started at the mill in 1929, as a packing clerk in finishing.

**TERRY VANINGEN** has joined the Perkins-Goodwin Co. as a member of the Paper Sales Department. Originally a member of the class of 1945 at Yale University, Terry VanIngen joined the Oxford Paper Co. as a member of the training program at their Rumford, Maine, mill. Transferred to the New York headquarters in 1948, he has been a member of the Oxford Paper sales organization since that time.

**JACK S. DAVIS,** has been appointed assistant sales manager, Printing Paper Division. Crown-Zellerbach Co. whose move into the coated paper field is strengthend by the appointment.

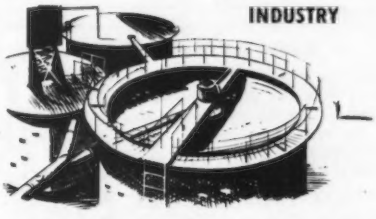
Crown-Zellerbach plans to develop the merchant phase of its printing paper business. For the last several years the company has manufactured coated papers in the publication grades. Mr. Davis will headquarter in San Francisco.

**P. M. CHIMINATTO,** secretary-treasurer of Hoberg Paper Mills, Inc., has been elected to the national board of directors of the National Assn. of Cost Accountants. He will begin a two year term July 1.

**JOHN S. WILLIAMS** has joined the sales staff of General Paper Corp. of Pittsburgh, Pa.


# CORROSION

**AFFECTS EVERY PLANT IN THE PAPER INDUSTRY**



## MILLIONS OF DOLLARS ARE LOST ANNUALLY

And your plant is *not* immune. Corrosion may attack in many ways . . .

**1. Your Hard-to-Get Equipment**
. . . may be ruined by constant attack of acids, alkalies, fumes, chemicals, moisture, gases and weathering.

**2. Your Valuable Products**
. . . are subject to contamination and loss whenever they are in contact with corroded surfaces.

**3. Expensive Shutdowns**
. . . and loss of production with costly man-hours for repairs may be incurred unnecessarily.

**4. Your Profits**
Ruined equipment, contaminated products, the loss of production and repair expense caused by shutdowns mean only one thing . . . reduction in *your* profits!

RIGHT NOW . . . you should investigate the economies of using Amercoat; a *line* of coatings built to protect against *specific* industrial corrosion hazards.

Our field engineers are available . . . without obligation . . . to check your plant for corrosion problems . . . and to give you *specific* recommendations.

**AMERCOAT CORPORATION**
A division of
American Pipe and Construction Co.
4809 Firestone Blvd., South Gate, Calif.

FOLLOW THE LINE OF *most* RESISTANCE

PROTECT WITH *Amercoat*

# FINANCIAL

*Puget Sound Pulp & Timber Co.* declared a quarterly dividend of 50 cents a share on the common stock, payable June 30 to stockholders of record June 25, 1952. Including this distribution, dividends totaling $1 a share have been paid thus far in 1952.

*St. Lawrence Corp., Ltd.,* has declared a dividend of 50c on common, payable July 25 to shareholders of record June 30.

# OBITUARIES

**Peter Lauritz Steinbesk,** 76, long connected with the paper supply business, died June 1. He was employed by the Thacker Craig Paper Co., for 17 years with Frank Brothers and more recently until his retirement with the Springfield Paper and Merchandise Co.


**CHAS. T. MAIN, INC.**
**CONSULTING ENGINEERS**
Process Studies, Design, Specifications and Engineering Supervision
**PULP AND PAPER MILLS**
Steam, Hydraulic and Electrical Engineering Reports, Consultation and Valuations
80 Federal Street Boston 10, Mass.



**MISCO**
STAINLESS STEEL CASTINGS
FOR ALL EQUIPMENT EXPOSED TO CORROSION BY SULPHITE ACIDS OR OTHER CORROSIVE AGENTS
MICHIGAN STEEL CASTING CO.
DETROIT 7, MICHIGAN



DESIGN • FINISH
APPLETON FELTS

APPLETON WOOLEN MILLS APPLETON, WISCONSIN


**C. P. Robinson,** 68, with offices at 420 Lexington Ave., New York City, sales representative for Kidder Press Co., Hanchett Manufacturing Co. and American Shear Knife Co., died in his sleep on June 12 at Mechanicville, N. Y. He was buried on June 17 at Boonton, N. J. He resided at 370 Morris Ave., Mountain Lakes, N. J. Mr. Robinson had been production manager of pulp and paper for Cherry River Paper Co. for ten years; sales manager of the Borregaard Co., Inc. for sixteen years and had been operating as manufacturing representative and industrial consultant for the past fourteen years throughout the United States and Canada. He is survived by his widow, Elizabeth and a daughter Katherine Ann.

**Paul Edwin Trouche,** oldest wholesale paper merchant in Charleston, S. C., died recently at the age of 85. Mr. Trouche established his paper firm in 1895. In 1912, he moved to its present location, 215 Meeting street, when the firm name was changed to Paul E. Trouche & Son. Mr. Trouche was ill only four weeks, having been active in business up to that time.

**Oswald F. Marquardt,** 67, Upper Montclair, N. J., president of Marquardt & Co., Inc., wholesaler paper merchants of New York, died June 5 in Moutainside Hospital, Montclair, after a brief illness.

Mr. Marquardt was a former president of the National Paper Trade Assn., Paper Association of New York and Paper Club of New York.

**Earl F. Johnson,** 63, a vice-president of the Inland Container Corp., and general sales manager of the corporation's Johnson Box division, died of a heart attack June 9 while driving home from work. He was found slumped behind the wheel of his automobile by police. A rescue squad failed to revive him. Mr. Johnson founded the Johnson Box Co. in 1933. In 1937, it became a division of the Inland Container Corp. Mr. Johnson joined the staff of the corporation at that time.

**Ralph E. Skinner,** 57, one-time secretary of the Harmon Paper Co., Brownville, N. Y., and of the Warren Parchment Co., Dexter, N. Y., died suddenly at his home in Watertown, N. Y., June 6. Mr. Skinner also had served for a time as a paper broker for the Great Northern Paper Co. and the St. Regis Paper Co.

**Louvian G. Simons,** paper mill engineer, died June 10. Mr. Simons had been associated with Chas. T. Main, Inc., Boston, Mass., since 1945 on paper and pulp mill engineering projects. He was a member of TAPPI and a registered professional engineer in the state of New York.

## AMERICAN PULP AND PAPER ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

| | | | | | |
|---|---|---|---|---|---|
| 1952 | May 10<br>91.8 | May 17<br>90.2 | May 24<br>90.7 | May 31<br>84.9r | June 7<br>89.7 |
| 1951 | May 12<br>102.7 | May 19<br>102.9 | May 26<br>103.6 | June 2<br>99.6 | June 9<br>103.4 |

COMPARATIVE MONTHLY SUMMARIES

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1951 | 99.3 | 101.3 | 101.9 | 102.8 | 102.2 | 100.1 | 88.6 | 97.7 | 94.3 | 100.3 | 98.0 | 90.0 | 98.0 |
| 1952 | 97.1 | 97.9‡ | 96.1‡ | 91.4‡ | 89.4‡ | | | | | | | | |

COMPARATIVE YEARLY SUMMARIES

| | 1945 | 1946 | 1947 | 1948 | 1949 | 1950 | 1951 | 1952 |
|---|---|---|---|---|---|---|---|---|
| Year to Date | 88.9 | 100.2 | 105.5 | 100.1 | 88.4 | 95.5 | 101.8 | 94.2 |
| Year Average | 85.4 | 96.9 | 101.7 | 92.1 | 83.7 | 95.8 | 98.0 | |

‡ Preliminary.
r Revised.

PAPERBOARD OPERATING RATIOS†

| | | | | | |
|---|---|---|---|---|---|
| 1952 | May 10<br>81 | May 17<br>83 | May 24<br>83 | May 31<br>79 | June 7<br>75 |
| 1951 | May 12<br>104 | May 19<br>106 | May 26<br>102 | June 2<br>100 | June 9<br>102 |

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1951 | 102 | 105 | 104 | 105 | 104 | 103 | 84 | 94 | 86 | 87 | 82 | 75 | 94 |
| 1952 | 81 | 86 | 85 | 82 | 82 | | | | | | | | |

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: In the above tables all the ratios shown are on the basis of a normal 6 and 7 day capacity.

† Per cents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.

# CLEARING HOUSE

## HELP WANTED

### MEN WANTED—POSITIONS OPEN

We can place—Manager large specialty paper mill, sulphite bonds, book, writing and converting papers; purchasing agent or buyer for pulp and paper mill supplies; asst. mgr. of mfg., large pulp and paper mills, splendid salary; asst. supt. paper converting, printing and packaging; asst. supt. industrial relations; supt. kraft specialty paper mill; asst. supt. Fourdrinier mach. mill making lightweight specialties; salesman for rag flat papers and boxed writing papers and stationery; boss machine tender, Fourdrinier mach, mill on lightweight specialties.

Technical Control Supt. for kraft specialty papers. Master Mechanics, salary range $6,000 to $12,000 year; asst. electrical engineer; civil and mech. engineers; asst. power supervisor; chemists, chem. engineers and laboratory men for mills and for demonstrating and selling, salary range $3,600 to $9,000 year; finishing foreman; envelope salesman; paper salesman for New England territory; beater engineers; mach. tenders and back tenders; Cylinder mach. foreman boxboard; Fourdrinier mach. foreman kraft specialty papers.

LIST YOUR CONFIDENTIAL APPLICATION WITH US
to keep informed of attractive positions open in the pulp and paper mills.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston 8, Mass.
SPECIALISTS IN PLACING AND IN SUPPLYING PULP AND PAPER MILL EXECUTIVES

**HELP WANTED**

Starting our second machine. Need Machine Tenders, Back Tenders, Third Hands, and Beater Engineers. One straight Fourdrinier and One Yankee Fourdrinier. Manufacturing Wrappings, Specialties, Corrugating Medium, and Light Weight Chip. Best of Labor Relations, Insurance, and Liberal Pension Plan. Mill Located about 40 miles from Chicago, Ill.

PRAIRIE STATE PAPER MILLS
JOLIET, ILLINOIS PHONE 3-3441 OR WRITE
TF

**WANTED—Chemist with Paper Mill experience, must be familiar with chemicals used in field. Good chance for rapid advancement. Give full particulars in first letter.**
Box 52-266 Care Paper Trade Journal
J-20

EXPERIENCED PAPER MILL SUPERINTENDENT between 30 and 45. Must have experience in specialty papers, including lightweights. Excellent opportunity. Address Box 52-267 care Paper Trade Journal. J-20

## HELP WANTED

### SMALL BAG MACHINE ADJUSTERS

A fine opportunity for experienced men on either sacks or automatics. Steady employment, many employee benefits. Philadelphia. Reply fully. Confidential. Address Box 52-243, care of Paper Trade Journal. J-27

**Personnel Service Associates**
115 State St., Springfield 3, Mass.
Personnel Consultants
Confidential placement services for employers and employes in the pulp and paper industries and allied trades. Attractive positions and competent men always listed. (Administrative-technical-sales-general personnel) J-20

FINE PAPER MANUFACTURER with national distribution wishes to expand their sales force. State experience, references and compensation wanted. Address Box 52-254 care Paper Trade Journal. J-20

PAPER CHEMIST for research and development work in our central research laboratories. Prefer Ph.D. with several years' experience in the paper industry. Excellent opportunity for man able to assume responsibility for important development work. Please send resume to Employment Office, American Cyanamid Company, Stamford, Conn. J-27

WANTED—Assistant Millwright or assistant master mechanic, willing to work, in one-machine Board Mill. Company steadily growing. Great chance for advancement for right man. State experience in first letter. Address Box 52-165 care Paper Trade Journal. TF

WORKING SUPERINTENDENT for small fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 52-76 care Paper Trade Journal. TF

PAPER BAG MACHINE ADJUSTER—Experienced sack and printed specialties, duplex and triplex. New York City plant. Give background and experience. Address Box 52-256 care Paper Trade Journal. J-20

PAPER BAG MACHINE ADJUSTER—Experienced Potdevin Self opening machines and printing. New York City Plant. Give background and experience. Address Box 52-257 care Paper Trade Journal. J-20

ASSISTANT PAPER MILL SUPERINTENDENT—Must have good experience in specialty papers, including manifold, register and lightweights. Reply, stating age. Address Box 52-265 care Paper Trade Journal. J-20

## HELP WANTED

### TOUR BOSS WANTED

For progressive two machine board mill in eastern Pennsylvania. Manufacturing set-up and folding boxboards and specialties. Steady employment. If you are available, write Box 52-255, Paper Trade Journal, giving experience and age. J-27

SALESMAN for Paper Mill Sales Office in New York City; experienced preferred. State full details and salary desired. Address Box 52-261 care Paper Trade Journal. J1-4

## SITUATIONS WANTED

AVAILABLE AT ONCE FOR TEMPORARY PROJECT OR PERMANENT POSITION. YOUNG, ENERGETIC EXECUTIVE. MAINE GRADUATE. TAPPI. 30. FAMILY MAN. EXCELLENT EXPERIENCE MULTIPLANT OPERATIONS. ENGINEERING, PRODUCTION, PURCHASING, PAPERMAKING, CONVERTING, WASTE PAPER, DEINKING & BLEACHING. PRESENTLY RESIDES N.Y.C. BOX NO. 52-264 CARE PAPER TRADE JOURNAL. J-20

BEATERMAN AND COLORIST Available. Aged 58. One of the most highly skilled men in the industry. Address Box 52-249 care Paper Trade Journal. J-20

CHEMIST—Age 30. Nine years experience in paper. Four years experience in adhesive development and five years in technical phase of multi-wall bag manufacture. Address Box 52-246 care Paper Trade Journal. J-27

SUPERINTENDENT—25 years practical experience manufacturing folding boxboard and high grade light and heavy weight specialties from sulphite, sulphate, groundwood and old paper stock. Aggressive, capable man, good references. Address Box 52-226 care Paper Trade Journal. J-27

WANTED—Position as Chief Engineer. 20 years experience. Married. Age 45. Best of references. Address Box 52-242 care Paper Trade Journal. J-20

SUPERINTENDENT — Twenty five years practical and technical experience on fine Specialty grades. Experienced on both Yankees and Fourdrinier operation. vailable on reasonably short notice. Address Box 52-251 care Paper Trade Journal. TF

TOUR BOSS—Desires the opportunity to prove ability as Superintendent of small cylinder or Fourdrinier Mill producing folding box, or high test corrugating medium from waste. Can handle and train help. Quality and cost conscious. References, age 43. Address Box 52-263 care Paper Trade Journal. J1-4

## WANTED—PAPER MILL MANAGER

A large diversified mill requires mill manager for its fine and specialty papers division making large tonnage of sulphite bond, book, writing and converting papers. Must have experience in production of fine papers, coupled with management ability. Excellent opportunity for superintendent with the experience and ability for advancement to senior position.

Address in confidence:

**CHARLES P. RAYMOND SERVICE, Inc.**

294 Washington St. Boston 8, Mass. Telephone Liberty 2-6547
J-20

TELEPHONE
HUMBOLDT 2-2177

CABLE ADDRESS: JACKROSS

# ROSS PAPER MACHINERY CO.

265 PASSAIC STREET
NEWARK 4, N. J.

CONVERTING
PAPER MAKING EQUIPMENT

NEW, USED, REBUILT
PAPER AND PULP MACHINERY

**AGITATOR DRIVE**
2—Cleveland enclosed—3 h.p. Ratio 24 to 1.
1—Foote Bros. enclosed—15 h.p. Ratio 33 to 1.

**AIR HOIST**
1—5-ton Ingersoll-Rand with Trolley.

**BALERS**
1—New Economy Baler—16 x 30 x 39½.
1—Economy Baler—20¼ x 24 x 49.
1—Economy Baler—18½ x 34 x 42¼.
1—Logeman Baler—27¼ x 47½ x 62 with GE Motor and Controls.

**BEATER FILLING**
1—New 54" Beater Filling with ½" bars, woods and bed plate.

**BLOWERS**
1—Sturtevant Monogram Fan, Ball bearing, Size 7.
1—Sturtevant Multivane Fan, Ball bearing, Size 6.

**CALENDER ROLLS**
16—Chilled Iron Rolls—Assorted sizes.

**CALENDER STACKS**
1—Farrel Birmingham, 5 roll, 108" Calender with doctors, 2 rolls bored for steam.
1—Black Clawson 90" 7 roll with 3 spare rolls.
1—Pusey & Jones 84" 7 roll, with doctors and drive.
1—Holyoke 3 roll 45". Rolls bored for steam.
1—88" 5-roll.

**COATER**
1—Waldron 42" 2 roll Coater. Will apply waxes, gums, lacquers, etc., on cellophane, paper or plastics. New 1946. Used 3 years.

**"CYCLAFINER"**
1—Shartle "Cyclafiner" with coupling.

**CYLINDER MOLDS**
1—134" face x 36" diameter, with stainless steel shafts.

**DAMPENER**
1—Valley Micromist Unit for water finish on paper—120" deckle.

**DRIVES**
1—#3 Reeves anti-friction bearing.
1—#6 Reeves anti-friction bearing with motor for adjustment.
1—Beloit enclosed drive right angle, ratio 3 to 1, with couplings and pulleys.
1—Falk enclosed drive, Type 911-F, ratio 5 to 1.
1—Link-Belt 40 h.p., ratio 2.2-1, 500 r.p.m.—227 r.p.m.
1—Cleveland enclosed drive right angle, 7 h.p., 24¼ to 1 ratio, 1750 r.p.m.

**DRYERS**
2—124" face x 48" diameter.
1—77" face x 48" diameter—with gear.
1—102" face x 48" diameter, with bearings.
3—110" face x 42" diameter, with bearings and gears.
1—109" face x 42" diameter Creping Dryer.
3—42" face x 36" diameter, with frames, gears and bearings.
19—46" face x 48" diameter, with gears, bearings and steam joints.
19—127" face x 42" diameter.
3—116" face x 48" diameter.
2—103" face x 48" diameter.
2—116" face x 36" diameter, with gears and bearings.
1—126" face x 48" diameter.
14—160" face x 48" diameter.
2—160" face x 36" diameter.
1—130" face x 48" diameter.
34—143" face x 48" diameter with frames, gears, bearings, steam joints, etc.
7—137" face x 48" diameter with frames, gears, bearings, steam joints, etc.
13—132" face x 48" diameter with frames, gears, bearings, steam joints, etc.
12—New Moore & White 68" face x 36" diameter, with frames, gears and bearings.

**EXTRACTOR ROLLS**
1—Downingtown Extractor Roll—128" face x 24" diameter. Anti-friction bearings.

**FILTER PRESS**
1—New Sperry 12" Filter Press—20 plate.

**FILTERS**
1—Oliver Vacuum Filter, 10' face x 5' 3" diameter. Steel vat.

**FLAT SCREENS**
3—8 plate Sandy Hill Roller Shoe with scrapers.
1—Sandy Hill 12 plate roller shoe.
3—Bagley & Sewall 8 plate, with scrapers and plates.
1—6 plate tailing screens with scrapers.
1—4 plate tailing screen with scraper.

**FOURDRINIER SECTION**
1—Pusey & Jones 156" x 80' Wire—Ball bearing. Complete from Voith Inlet to 22" diameter suction couch.

**FOURDRINIER WIRES**
3—New Lindsay 76" x 47 ft. 10"—60 mesh.

**"HYDRAPULPER"**
1—Shartle-Dilts 16' batch with hydraulic dump valve—cast iron tub.

**HYDRAULIC PRESS**
1—Thorpe 200 ton. Steam platens, 40" x 40" with pump.

**JORDANS**
1—#6 Miami, for motor drive.
1—Jones Majestic Stainless Steel Filling.
3—E. D. Jones Pony, 3/16" stainless steel fillings—banded plugs, spare new fillings.
1—Smith & Winchester Standard with granite fillings.

**KNIFE GRINDER**
1—100" Hanchett Knife Grinder with motor.

**MOTORS**
2—Westinghouse 200 h.p. 2200 volts—3 ph.—60 cycle—600 r.p.m. Synchronous speed with controls and grids.
1—Westinghouse 150 h.p. 2200 volts—3 ph.—60 cycle—580 r.p.m. with controls and grids.
1—Allis Chalmers 30 h.p., 440 v., 660 r.p.m.
1—General Electric—25 h.p.—230 volts—3 ph.—60 cycle—300/900 r.p.m.
25 other 440 v. motors from 2 h.p. to 15 h.p.

**PULP EQUIPMENT**
2—APMEW Ball Bearing Pulp Screens—30 ton capacity—outward flow.
1—D. J. Murray 10' x 25' Barking Drum.

**PULPERS**
2—#2 Lannoye.

**PUMPS**
1—New Worthington—bronze filled, 10,000 g.p.m., 35' head, with extended base for motor—spare new impeller.
44—Centrifugal Pumps, open & closed impellers. Direct connected or Belt Driven. Extended base for motor. Assorted capacities and heads. Most used less than one year.

**REELS**
1—2 bowl 106"—18" diameter iron bowls.
1—2 bowl 94"—16" diameter bowls.

**REFINER**
1—Shartle Hydrafiner with coupling and new spare stainless steel filling.

**ROLL GRINDER**
1—Lobdell 14' Roll Grinder handles 30" maximum diameter rolls.

**ROLLS—PRESS, COUCH, etc.**
32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

**ROTARY SCREENS**
1—#2 Bird—Copper vat.

**SAVEALL**
1—Bird #5 with enclosed drive and 3 h.p. motor.

**SCREW PRESSES**
1—Valley Voith Screw Press, size 2.
1—Valley Voith Screw Press—enclosed drive.

**SHEETERS**
1—Hamblet 124" Duplex Sheeter with maxim layboy—8 roll backstand—motor and starter.
1—Moore & White Simplex 114" Sheeter with slitters—counter. Maxson layboy overlapping delivery. 8 roll backstand, motor and starter.

**SHREDDERS**
1—American 37" Hammermill, anti-friction bearing.
1—Jeffrey, 26½" knives, 7 knife rotor, 6 knife bed plate. Ball bearing.

**SLITTERS AND WINDERS**
1—Beloit 125" Paper Machine Slitter and Rewinder—42" rewind.
1—Hudson Sharp 25W—66" Wax roll slitter and rewinder. New 1947.
2—Cameron 42", Model 6—24" rewind.
1—Cameron 44", Model 9-5.

**SMOOTHING PRESSES**
2—New Farrel Birmingham 108" face x 24" diameter. Rubber covered, with ball bearings and enclosed drives.

**STEAM TURBINES**
1—De Laval 225 h.p. Initial pressure 140 p.s.i. Exhaust pressure 35 p.s.i. Complete with gear reducer.
1—De Laval Variable Speed—375 h.p. at 135 gauge and 30 p.s.i. exhaust. Complete with gear reducer.

**STOCK PUMPS**
1—Shartle 10 x 20 Single Plunger Pump.
2—Beloit 8 x 10 Triplex.
1—Triplex—8 x 10. Used less than 1 year.
2—Shartle Agi-flo, 13" suction, 14" and 4" discharge. Anti-friction bearings.
1—Beloit 10 x 20 Triplex.
1—Moore & White 10 x 16 Triplex.
1—Moore & White 8 x 8 Triplex.

**SUCTION COUCH ROLLS**
1—Millspaugh 36" diameter x 234" drilled face with enclosed drive, water cooled bearings, 12" suction boxes.

**SUCTION FELT ROLL**
1—New Downingtown 186" drilled face x 16" diameter, with anti friction bearings and stands.

**SUCTION PRESS ROLLS**
1—Sandusky 97" drilled face x 14" diameter.
1—Sandusky 92" drilled face x 22" diameter, with pinion gear.

**TOILET TISSUE PERFORATOR**
1—Paper Converting Machine Co. Model 141 automatic 81" Perforator, Slitter and Winder—with three motors—ball bearing.

**TRANSMISSION ROPE**
700 ft.—New 1¼" Hemp Rope.
700 ft.—New 1¼" Cotton Rope.

**VACUUM PUMPS**
2—Nash ½ H-5 Vacuum Pumps.
2—Nash K-5.
1—Nash K-4.

**VORTRAPS**
15—4" Stainless Steel with rubber lined heads. 3" Hills McCanna Valves and stainless steel headers.

**WRAPPING MACHINE**
1—Morrow Stevens type 1C. Package thickness ¾" to 5". Used 30 days.

**YANKEE DRYERS**
1—New Sandy Hill 100" face x 72" diameter, with bearings and doctor.
1—Voith 100" face x 10" diameter—with bearings.

**WHY LIST YOUR EQUIPMENT? — WE WILL BUY IT!**

## FOR SALE

**CAMERON SLITTERS**

1—62" Type 26-3A Duplex
1—52" Type 8-5
1—42" Type 6
1—32" and 1—42" Type 40-2A
1—42" and 1—62" Type 40-1-AF
1—62" Type 9-5A
1—52", 1—62" and 1—72" 10-5.
1—72" and 1—84" Type 8-10

**OTHER SLITTERS**

1—54" Chambon Slitter Shear Cut
1—62" Beck Duplex Rewind Razor Blade Slitter & Rewinder. Suitable for paper and plastics
1—62" Type AA Langston Shear Cut
1—30", 1—40" and 1—62" Langston Type A Shear Cut
1—42" Kidder Merchant Model Shear Cut Pneumatic Control
1—40" Type C Fales, shear-cut.
1—94" Beloit, heavy duty Paper Machine Winder
1—112" Waldron Double Drum S. & R.
1—108" Sandy Hill Shear Cut Double Drum Rewinder

**POWER PAPER CUTTERS**

10—Seybold, 50" and 56" 10Z, 56" 8Z, 44" and 74" 20th Century, 44", 48" and 55" Holyoke
4—Oswegos, 38", 44", 50" and 74".
1—54" Sheridan
2—Dexter, 38" and 50".
5—Acme, 32", 34", 36", 46" and 50".
1—National 44".
1—30½" Diamond.
2—Smith & Winchester Undercut, 63" and 69"
1—51" "Perfecta"

**MISCELLANEOUS MACHINES**

1—40" Flocking Machine.
1—36" Chambon two unit Rotogravure press. With Shartle-Miami Waxing Machine. PIV Drive. Roll to Roll.
1—20" Champlain 5 color unit Rotogravure Press equipped with one Aniline-Anilox unit.
1—30" Baqprint 3 color Aniline Printing Press. Roll to Roll.
1—12" and 1—24" Schultz Automatic Shelf and Wax roll machine. Rewind 25' to 250'.
1—72" Hudsen-Sharp 25W Wlader for Waxed and Household paper rolls.
1—45" Beck Rotary Sheet Cutter with Jogger Table and Electric Eye.
1—36" Beck Sheeter with electric eye and Layboy
1—34" Waldron Gummed Paper Breaker.
1—Sheridan Die Press, Model 8B Platen 33" x 46". Automatic Feeder.
1—48" "Max Kroenerd" German Embosser with double drum rewind.
1—72" Potdevin Type Waxing Machine.
1—48" Mayer Equalizer Waxing Machine. Type 40-EV. Two Coating Heads and three 16" diameter Cooling Drums.
1—45" and 1—48" Hamblet Rotary Sheeter.
1—94" Moore & White Duplex Rotary Sheet Cutter.
1—84" Hamblet Single Sheeter with M&W Layboy and Backstands.
2—Asphalt Laminating machines, one 70" and one 88".
1—84" 9-roll Holyoke Stack of Super Calenders.
1—66" 9-roll Norwood Stack of Super Calenders.
1—61" Ten roll Holyoke Stack of Super Calenders
1—62" x 60" Dilts Iron Tub High Speed Bandless Beater
1—70" x 48" Jones Stainless Steel High Speed Beater
1—Model BM24 Manhasset flat and tuck type bag machine range 6" to 20" length 1½" to 12" wide
1—Weber #5AG SOS Bag Machine range 5 to 16 pounds
1—Reeves Variable Speed Drive size 5 Class F ratio 3 to 1
2—Sandy Hill 12 plate Packer Type Screens. Stainless Steel Plates.
1—Logeman Baler. Model 12MTX.
1—Economy Upstroke Baler. 10 HP Motor.

*We Want YOUR Used Equipment—*
*Write Us NOW*

**GIBBS-BROWER CO. INC.**

**Please address reply to Room 902**
**21 East 40th Street, New York 16, N.Y.**
**Telephone Lexington 2-5759**

J-20

## FOR SALE

## FOR SALE

## FOR SALE

1—#2 APMEW Pulper, 15 ft. x 10 ft. depth, roller bearing, practically new.

3—Cheney Bigelow Thickeners, cylinder molds 36" x 110", complete with motors and air controls.

1—Bird Machine Co. Dirtecs, 3—6" primary and 3—2" secondary, 22½ tons per day.

1—Hyster #20 Fork Lift Truck, 2000 lbs., practically new.

1—Hyster #40 Fork Lift Truck, 4000 lbs.

1—Stainless Steel Sectional Bleach Tank, 8½' diameter x 19' high, with IMPCO drive agitator, 25 h. p. motor, etc.

ALL OF ABOVE FOR IMMEDIATE DELIVERY.

**J. J. ROSS COMPANY**
250 Frelinghuysen Ave., Newark 5, N. J.
Tel. Bigelow 3-1720

J-20

**FOR SALE**—1—Swenson triple effect Evaporator, copper horiz. tube, total h.s. 1320 sq. ft. with piping, supporting steel, condenser, pumps, etc.; 1—Tolhurst 40" monel basket Centrifugal, 2 speed AC motor; 3 Oliver Filters, up to 8' x 12'. Send us your inquiries. CONSOLIDATED PRODUCTS CO., INC., 15-18 Park Row, New York 38, N. Y. BArclay 7-0600. TF

**PAPER COATING MACHINERY MANUFACTURERS**—Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

**FOR SALE**—45" Beck Sheeter with Elec. Eye; 48" Kidder Sheeter with Layboy; 62" Cameron Type 6; No. 7 Brightwood; ALSO MANY SET-UP AND FOLDING BOX MACHINES OF STANDARD MODELS. Write for listings. Address Box 52-168 care Paper Trade Journal. TF

**SUBJECT TO PRIOR SALE**—sheets of cellulose wadding, 18 x 24, which can be used for packaging. They have a wet strength sheet on one side and a water repellent sheet on the other side and can be used in many ways for packaging. Address Box 52-263 care Paper Trade Journal. J-27

**NEWSPRINT OFFERING**—500 tons per month available. Contracts for all or part invited. Address M. W. RANKE, Cheboygan, Michigan. J-20

**FOUR** (4) Dietz Toilet Paper Converting Machines for 81" rolls, 2 facial type, 2 regular type for either toilet towel or pleating; complete with motor drives, bars, etc. Address Box 52-259 care Paper Trade Journal. TF

## SALES REPRESENTATION

## FOR SALE

45" Hamblet Sheeter.
100" Dillon Sheeter with 10-roll Back-Stand.
72" Cameron 8-10 Slitter.
Model 9 Cameron Slitter, 42".
60" Oswego hand clamp Power Cutter.

**THOMAS W. HALL COMPANY, Inc.**
120 West 42nd St., New York 18.
(Plant at Stamford, Conn.) TF

**FOR SALE**—Bag Machine made by Manhasset Machine Company, new in 1947. Will make bags tube length 5.96" minimum to 19.16" maximum, tube width 1½" minimum to 12¼" maximum, flat or tuck side. Also equipped to make duplex bags. Includes motor and transmission. Price very low. Can be seen in operation. Write for details. Address Box 52-240 care Paper Trade Journal. J-20

## WANTED

**WANTED — SURPLUS**
**CHEMICALS — DYES — WAXES**
**PLASTICIZERS — SOLVENTS**
**PIGMENTS — OILS, etc.**
**CHEMICAL SERVICE CORPORATION**
**86-04 Beaver St., New York 5, N. Y.**
J-20

**WANTED**—Potdevin Self Opening paper bag machine, Number 83. Address Box 52-258 care Paper Trade Journal. J-20

**WANTED TO BUY**—Late model Hudson Sharp Modern Dispenser Type Napkin Machine and Hudson Sharp or Paper Converting Towel and Toilet Tissue Folders. Address Box 52-260 care Paper Trade Journal. JI-3

## SALES REPRESENTATION

## SALES REPRESENTATIVE

Prominent manufacturer of paper machine clothing has opening for sales representative.

We need a young man with initiative, moderate habits, good personality and appearance who must have considerable experience on paper machines.

Sales experience is desirable but not necessary.

Send detailed application with photo (which will not be returned) to Box 52-268 care PAPER TRADE JOURNAL.

TF

# ENGLISH ECCO CLAYS CLAYS

ECCO CLAYS TRADE MARK

**UNIFORM SUPERIOR DEPENDABLE**

**English China Clays Sales Corporation**
**551 Fifth Avenue, New York City**


## WHERE TO BUY

**ABRASIVES**
Norton Co.
Simonds Abrasive Co.

**ADHESIVES**
American Cyanamid Company Plastics & Resins Division
Diamond Alkali Co.
The Dow Chemical Co.
E. I. du Pont de Nemours & Co., Inc.
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company
Monsanto Chemical Co.
Morningstar, Nichol, Inc.
National Starch Products, Inc.
Nopco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Rohm & Haas Co.

**ADJUSTABLE SHAKE MOTION**
Manchester Machine Co.
Rice Barton Corporation

**AGITATORS**
Apmew, Inc.
Appleton Machine Co.
Biggs Boiler Works Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Improved Paper Machinery Corp.
E. D. Jones & Sons Co.
Midwest Fulton Mch. Co.
D. J. Murray Mfg. Co.
Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.
Shartle Brothers Machine Co.

**ALLOYS**
Michigan Steel Casting Co.

**ANTIFOAM**
American Cyanamid Company Industrial Chemicals Division
Hercules Powder Co., Inc.
National Aluminate Corp.
Nopco Chemical Co.

**APRON CLOTH**
Williams-Gray Co.

**BAG MACHINES**
Dilts Machine Works
Potdevin Machine Co.
H. G. Weber & Co., Inc.

**BALL MILLS**
F. L. Smidth & Co.

**BARK BURNER**
Combustion Engineering-Superheater, Inc.
Nichols Engrg. & Research Corp.

**BARKERS AND CHIPPERS**
Appleton Machine Co.
Carthage Machine Co.
Improved Paper Machinery Corp.
D. J. Murray Mfg. Co.
The Noble & Wood Machine Co.
Valley Iron Works Co.

**BARS**
Dilts Machine Works
E. D. Jones & Sons Co.
Midwest Fulton Mch. Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

**BASIC WEIGHT SCALES**
Thwing-Albert Instrument Co.

**BEARINGS**
The Bagley & Sewall Company
Black Clawson Company
Dodge Mfg. Corp.
B. F. Goodrich Co.
E. D. Jones & Sons Co.
Magnus Metal Corp.
The Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
SKF Industries
Timken Roller Bearing Co.
The Torrington Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

**BEATERS AND JORDANS**
Apmew, Inc.
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Midwest Fulton Mch. Co.
Morden Machines Co.
The Noble & Wood Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

**BED PLATES**
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld Div., Lukens Steel Co.
Midwest Fulton Mch. Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
Shartle Brothers Machine Co.
Valley Iron Works Co.

**BELTING**
Alexander Bros. Belting Co.
Graton & Knight Inc.
Goodrich, B. F., Co.
The Goodyear Tire & Rubber Company
Manheim Mfg. & Belting Co.

**BINS, STORAGE**
Biggs Boiler Works Co.
The Noble & Wood Machine Co.

**BLEACHING AGENTS**
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

**BLEACHING APPARATUS**
Improved Paper Machinery Corp.
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**BLOW PIPES & PITS**
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

**BOARD MACHINES**
The Noble & Wood Machine Co.

**BOILERS**
Babcock & Wilcox Co.
Biggs Boiler Works Co.
Combustion Engineering-Superheater, Inc.

**BOTTOMS**
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

**BOXBOARD SCALES**
Thwing-Albert Instrument Co.

**BRUSH ROLLS**
M. W. Jenkins Sons, Inc.
Gus Reidel & Son

**BRUSHES**
M. W. Jenkins Sons, Inc.
Gus Reidel & Son
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.

**BUILDING MAINTENANCE CONTRACTORS**
Gilbert Engineering Co.

**BURSTING TESTERS**
B. F. Perkins & Son Inc.
Testing Machines, Inc.

**CALENDERS**
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell United Co.
The Moore & White Co.
Perkins & Sons, Inc., B. F.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.


Supplying Your Requirements

# AMERICA'S LEADING INDEPENDENT WASTE PAPER PACKERS

WASHINGTON, D. C.
PHILADELPHIA, PA.
NEW YORK, N. Y.
MINNEAPOLIS, MINN.

THOMAS PAPER STOCK COMPANY
1500 No. Hooker Street • Chicago 22, Ill.

**CARRIER ROPE**
Williams-Gray Co.

**CASEIN**
American Cyanamid Co.
Industrial Chem. Div.
Hercules Powder Co.

**CASTINGS**
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Babcock & Wilcox Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Hamblett Machine Co.
Lobdell United Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Walworth Company

**CENTRIFUGAL MACHINERY**
Bird Machine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

**CHAINS**
Jeffrey Mfg. Co.

**CHEMICAL COTTON PULP**
Hercules Powder Co.

**CHEMICALS**
American Cyanamid Co., Industrial Chem. Div.
Calco Chemical Co.
Calgon, Inc.
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
B. F. Goodrich Chemical Co.
Gottesman & Co.
Hercules Powder Co.
Heyden Chemical Corp.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Naugatuck Chemical Division of U. S. Rubber Co.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Reichhold Chemicals, Inc.
Rohm & Haas Co.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

**CHESTS**
The Bagley & Sewall Company
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Midwest Fulton Mch. Co.
The Noble & Wood Machine Co.
Shartle Bros. Mch. Co.

**CHUCKS**
Efficiency Engrg. Co.

**CLEANING MACHINES**
Hydro-Silica Corp.

**CLEANING MATERIALS**
American Cyanamid Company Industrial Chemicals Division
Diamond Alkali Co.
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Wyandotte Chemicals Corp., J. B. Ford Division

**CLOTH**
Lindsay Wire Weaving Co.

**CLUTCHES**
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Dodge Mfg. Corp.
Farrel-Birmingham Co.
Hudson-Sharp Mch. Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.

**COATING MACHINERY**
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co., Inc.
Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

**COATING MATERIALS**
American Cyanamid Company Industrial Chemicals Division
The Dow Chemical Co.
E. I. du Pont de Nemours & Co., Inc.
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

**COMPLETE FOURDRINIER ROLL GRINDING**
Manchester Machine Co.

**COMPRESSORS**
Nash Engineering Co.
Roots-Connersville Blower Corp.

**CONDENSATE FILTERS**
Hungerford & Terry. Inc.
The Permutit Company

**CONDENSERS**
Biggs Boiler Works Co.
Midwest Fulton Mch. Co.

**CONSISTENCY REGULATORS**
Askania Regulator Co.
Bird Machine Company
DeZurik Shower Company
Pandia, Inc.
Trimbey Machine Works

**CONSULTING ENGINEERS**
Black Clawson Company
Dilts Machine Works
Ebasco Services
Frank W. Egan & Co.
Ferguson, H. K., Company
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
O'Donoghue, Roderick
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
Frank C. Vaughan
John Waldron Corp.

**CONTINUOUS DIGESTER**
Pandia, Inc.

**CONTROLLERS**
Black Clawson Company
The Brown Instrument Co.

**CONTROLS**
The Brown Instrument Co.
Johnson Corp.
Poirier Control Co.
Shartle Bros. Mch. Co.
Westinghouse Electric Corp.

**CONVERTING MACHINERY**
The Bagley & Sewall Company
Egan, Frank W., & Co.
John Waldron Corp.
Dilts Machine Works

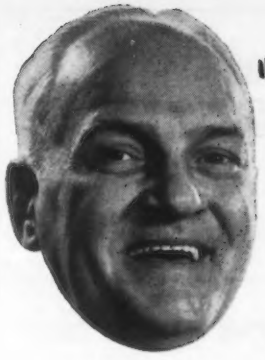
**CONVEYORS**
Black Clawson Company
Jeffrey Mfg. Co.
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.

**CORES**
Elixman Paper Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

**CORROSION RESISTANT**
Amercoat Corporation

**COTTON LINTER**
Hercules Powder Co., Inc.
Railway Supply & Mfg. Co.

**COUCH ROLLS**
Beloit Iron Works
Improved Paper Machinery Corp.
Manchester Machine Co.

"It's proved 200% to 300% more efficient"

**GLIDDEN PROSIZE**

No matter what your present sizing practice may be, it will pay you well to have a representative of the Glidden Technical Service demonstrate all the advantages you can gain from using Prosize in your mill. After changing from conventional rosin size to Prosize, users have reported that . . .

- Prosize Process is 200 to 300% more efficient.
- Prosize Process produces a better, more stable size which gives paper uniform resistance to liquids of various types, such as ink, water, meat juices, etc.
- Prosize Process permits duplication of results from run to run on grades never before made because of sizing difficulties.
- Prosize Process minimizes seasonal variations —is highly effective on stocks heated by long beating or hard jordaning.
- Prosize Process permits sizing at a higher or more neutral pH.
- Prosize Process requires from 35 to 65% less rosin size and from 15 to 30% less alum, making it generally *less expensive* to use.

Prominent mills with a combined production of thousands of tons of paper a day have proved this patented Glidden Prosize Process, utilizing Glidden Alpha* Protein in combination with rosin size and boric acid, to be a superior means of sizing. *Trademark Registered

QUALITY Glidden PRODUCTS

**THE GLIDDEN COMPANY**
**SOYA PRODUCTS DIVISION**
1825 N. Laramie Avenue • Chicago 39, Illinois

**WEST VIRGINIA PULP and PAPER COMPANY**

230 Park Ave.
New York 17, N. Y.

35 East Wacker Drive
Chicago 1, Ill.

503 Market St.
San Francisco 5, Calif.

**Manufacturers of West Virginia Mill Brand Papers**

SUPERCALENDERED
ENGLISH FINISH
LITHOGRAPH
LABEL
OFFSET
EGGSHELL
MUSIC
POSTER
BOND
WRITING

ENVELOPE
MIMEOGRAPH
INDEX BRISTOL
POST CARD
COVER
CUP AND CONTAINER
FILE FOLDER
COATED
MACHINE COATED

KRAFT LINER BOARD
KRAFT CONVERTING AND KRAFT ENVELOPE

MILLS

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

**PRICE & PIERCE LTD.**

*Wood Pulp and Paper Agents*

60 E. 42 ST., N. Y. 17


**COUPLINGS**
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co., Inc.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Dodge Mfg. Corp.
Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

**CRANES**
Reading Crane & Hoist Corp.
Whiting Corp.

**CURL TESTER**
Thwing-Albert Instrument Co.

**CUTTERS**
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Dusenbery Co., Inc.
Gibbs-Brower Company, Inc.
Graphic Arts International Corp.
Thomas W. Hall Co.
Jagenberg-Werke Akt. Ges.
Moore & White Co.
Perkins & Son, Inc., B. F.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
The Smith & Winchester Mfg. Co.
Taylor, Stiles & Co.

**CYLINDER MOULDS**
Black-Clawson Co.
Improved Paper Machinery Corp.
Manchester Machine Co.
Rice Barton Corporation

**CYLINDERS**
Biggs Boiler Works Co.
M. W. Jenkins Sons, Inc.

**DAMPENERS**
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

**DECKLE WEBBING**
Williams-Gray Co.

**DEFIBRATORS**
American Defibrator Co.

**DEFOAMERS**
American Cyanamid Co., Ind. Chem. Div.
Hercules Powder Co., Inc.

**DE-INKING**
Bird Machine Co.
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
Rice Barton Research Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**DEINKING CHEMICALS**
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Kinsley Chemical Co.
Nopco Chemical Co.

**DE-MINERALIZING EQUIPMENT**
Hungerford & Terry, Inc.

**DEMULSIFIERS**
Wyandotte Chemicals Corp., Michigan Alkali Div.

**DENSOMETERS**
W. & L. E. Gurley

**DESIGN CONSTRUCTION**
Ebasco Services

**DETERGENTS**
American Cyanamid Company Industrial Chemicals Division
Calgon, Inc.
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

**DEWAXING CHEMICALS**
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

**DIFFERENTIAL SCALES**
Thwing-Albert Instrument Co.

**DIGESTERS**
Babcock & Wilcox Co.
Biggs Boiler Works Co.
Blaw Knox Company
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Lukenweld
Pandia, Inc.
Paper & Industrial Appliances
Pusey & Jones Corp.

**DISPERSING AGENTS**
Calgon, Inc.
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

**DOCTORS**
The Bagley & Sewall Company
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell United Co.
Lodding Engineering Corp.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**DOCTOR BLADES**
The Bagley & Sewall Company
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Simonds Saw & Steel Co.
Westinghouse Electric Corp.

**DRIERS**
The Bagley & Sewall Company
Biggs Boiler Works Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Rice Barton Corporation
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

**DRIERS—LABORATORY**
The Noble & Wood Machine Co.

**DRILLED SUCTION COUCH ROLLS**
Manchester Machine Co.

**DRILLED SUCTION DRUM ROLLS**
Manchester Machine Co.

**DRIVES**
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Bird Machine Co.
Black Clawson Company
Dodge Mfg. Corp.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Jeffrey Mfg. Co.
General Electric Company
Gibbs-Brower Company, Inc.
Manchester Machine Co.
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Valley Iron Works Co.

**DRUM WINDERS**
Manchester Machine Co.
Rice Barton Corporation

**DRYER ROLL PYROMETER**
Midwest Fulton Mch. Co.
Thwing-Albert Instrument Co.

**DUSTERS**
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

**DUSTING BRUSHES**
M. W. Jenkins Sons, Inc.

**DYESTUFFS**
American Cyanamid Company
Calco Chemical Div.
Ciba Company

E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
National Aniline Division, Allied Chemical & Dye Corp.

**ELECTRIC HYGROMETER**
Thwing-Albert Instrument Co.

**ELECTRICAL PRECIPITATORS**
Research Corporation

**EMBOSSING MACHINES**
Dilts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

**EMBOSSING ROLLS**
The Appleton Machine Co.
Gibbs-Brower Company, Inc.
Holyoke Machine Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

**EMPLOYMENT SERVICE**
Bixby, R. W., Inc.
Raymond, Chas. P., Service, Inc.

**EMULSIFIERS**
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

**ENZYMES**
Rohm & Haas Co.
Vanderbilt Co., R. T.

**EVAPORATORS**
Biggs Boiler Works Co.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.
Westinghouse Electric Corp.

**EXPANDERS**
Mount Hope Machinery Co.

**FANS**
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.
Westinghouse Electric Corp.

**FEEDERS**
Jeffrey Mfg. Co.
Merrick Scale Mfg. Co
The Permutit Company

**FELTS**
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Morey Paper Mill Supply Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.

**FELT CLEANERS**
Calgon, Inc.
General Dyestuff Corp.
Nopco Chemical Co.

**FELT CONDITIONERS**
Bird Machine Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

**FELT GUIDES**
Black Clawson Company
Frank W. Egan & Co.
Gilbert & Nash Co.
Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

**FIBRE BOARD MACHINES**
The Noble & Wood Machine Co.

**FILLERS**
American Cyanamid Company, Industrial Chemicals Division
J. M. Huber Corp.
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

**FILTERS**
Bird Machine Company
Holyoke Machine Co.
Hungerford & Terry, Inc.
Improved Paper Machinery Corp.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

**FITTINGS**
The Bagley & Sewall Company
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

**FLEXIBLE COUPLINGS**
Egan, Frank W., & Co.
Jeffrey Mfg. Co.
John Waldron Corp.
Westinghouse Electric Corp.

**FLOORING, GRATING AND TREADS**
The Goodyear Tire & Rubber Company
Norton Co.

**FLOW BOXES**
Biggs Boiler Works Co.
Lukens Steel Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

**FORK LIFT TRUCKS**
Elwell Parker Elec. Co.
Towmotor Corp.

**FORMATION TESTERS**
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

**FOURDRINIERS**
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
Manchester Machine Co.
The Moore & White Co.
Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**FREENESS TESTERS**
Testing Machines, Inc.
Williams Apparatus Co.

**GASKETS**
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company

**GEAR REDUCERS**
Dodge Mfg. Corp.

**GEARS**
The Bagley & Sewall Company
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

**GRAPPLES**
Blaw-Knox Company

**GRAVITY FILTERS**
Holyoke Machine Co.

**GRINDERS**
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell United Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

**GRINDING WHEELS**
Norton Company
Simonds Abrasive Co.

**GUIDES**
The Bagley & Sewall Company
Black-Clawson Co.
Egan, Frank W., & Co.
Gilbert & Nash Co.
The Moore & White Co.
Mount Hope Machinery Co.
Rice Barton Corporation
John Waldron Corp.

**GUMMING MACHINES**
Dilts Machine Works
Egan, Frank W., & Co.
The Sandy Hill Iron & Brass Works
Waldron, John, Corp.

**GUMS**
Hercules Powder Co., Inc.
National Starch Products, Inc.

**HEAT EXCHANGERS AND RECOVERY SYSTEMS**
Westinghouse Electric Corp.

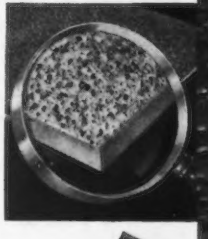
**ARE SLIPPING ACCIDENTS CRIPPLING YOUR PRODUCTION?**

Water or pulp on floors around your machines can cause serious slipping accidents and lost profits. But **not** when you install positive non-slip A. W. ALGRIP Abrasive Rolled Steel Floor Plate!

**NON-SLIP—EVEN ON STEEP INCLINES!**

An exclusive process puts hundreds of tough, abrasive particles in every square foot of A. W. ALGRIP. These tiny safety brakes grip your feet at each step, so it's virtually impossible to slip. Even when the surface is wet or greasy, even on steep inclines, ALGRIP keeps its anti-skid safety.

**WEAR CAN'T WEAR IT SMOOTH!**



ALGRIP doesn't give mere surface safety. The tough, abrasive grain (same type used in grinding wheels) is rolled uniformly and deeply as an integral part of the steel plate's upper portion. As the surface wears, new abrasive particles are exposed—so ALGRIP keeps its non-slip qualities for a lifetime. Maintenance is unnecessary. And because ALGRIP is rugged, *rolled* steel—stronger than other abrasive floorings—you can use thinner sections without losing load carrying capacity.

**NEW BOOKLET SHOWS HOW TO END SLIPPING ACCIDENTS**

Yours for the asking, our new, 8-page, fully illustrated Booklet A-25 gives full technical data, sizes, weights, suggestions for using ALGRIP. Write for your copy and ask any questions you wish. Our design and engineering staff is always glad to discuss specific problems—without obligation.

**A.W. ALGRIP**
ABRASIVE ROLLED STEEL FLOOR PLATE

**ALAN WOOD STEEL COMPANY**
CONSHOHOCKEN, PA.
*THERE'S NEVER A SLIP ON A. W. ALGRIP*

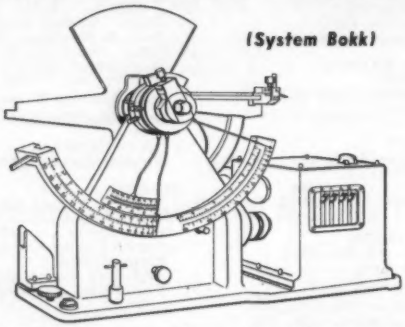
Other products: *PERMACLAD Stainless Clad Steel • A. W. SUPER-DIAMOND Floor Plate • Plates • Sheets • Strip • (Alloy and Special Grades)*

*Over 125 years of iron and steel making experience*

*New*

## TENSILE-STRENGTH TESTER

*(System Bokk)*



The following tests can be made with the apparatus shown above:

1. Determination of the tensile strength (breaking stress) by slowly increasing (static) stress, in accordance with standards in general use.
2. Determination of the elongation of the paper at the breaking moment of the test-strip (real tensile elongation)
3. Determination of the corresponding stress and elongation values before the fracture at any particular stress slope.
4. Determination of the strength of the paper at prolonged stress.
5. Determination of the strength reduction of the paper at one-sided or two-sided moistening (wet strength).
6. Determination of the strength of the paper at impact stress, in other words, the resistance to actual working conditions (dynamic tensile test).

**A. van der KORPUT**
**BAARN** (Holland)
*Manufacturers of Paper-Testing Instruments*

Geigy
DYESTUFF MAKERS
SINCE 1859

STOCKS OF DYESTUFFS CARRIED IN ALL LARGE PAPER MAKING AREAS.

**GEIGY COMPANY, INC.**
89-91 BARCLAY STREET, NEW YORK 8, NEW YORK
BRANCH OFFICES: BOSTON • CHARLOTTE, N. C. • CHICAGO • LOS ANGELES
PHILADELPHIA • PORTLAND, ORE. • PROVIDENCE • TORONTO
IN GREAT BRITAIN: The Geigy Co., Ltd., Manchester

**FIBER RESEARCH AND SERVICE**

Semi-Chem. and Chemical Pulp Processes

*Pilot Plant Facilities*

**THE KINSLEY CHEMICAL COMPANY**
**Cleveland 11, Ohio**


**HEATING, VENTILATING & AIR CONDITIONING**
The Appleton Machine Co.
E. D. Jones & Sons Co.
General Electric Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O. Ross, J. O., Engrg. Corp.
Valley Iron Works Co.
Westinghouse Electric Corp.

**HOISTS**
Reading Crane & Hoist Corp.

**HOSE (Air, Water, Suction, etc.)**
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company

**HUMECTANTS**
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

**IMPREGNANTS**
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.

**INDENTING MACHINES**
Dilts Machine Works

**INDUSTRIAL TIRES**
B. F. Goodrich Co.

**INDUSTRIAL TRACTORS**
Towmotor Corp.

**INKOMETER**
Thwing-Albert Instrument Co.

**INSTRUMENTS, TESTING AND MEASURING**
Black-Clawson Co.
Brown Instrument Co.
Cambridge Instrument Co.
General Electric Company
W. & L. E. Gurley
B. F. Perkins & Son
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
A. van der Korput
Williams Apparatus Co.
Westinghouse Electric Corp.

**JOINTS**
The Bagley & Sewall Company
Beloit Iron Works
Johnson Corp.
Rice Barton Corporation
Shartle Bros. Mch. Co.

**JORDAN FILLINGS**
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

**KNIVES**
Black Clawson Company
Dilts Machine Works, Inc.
Dusenbery Co., Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
The Moore & White Co.
The Noble & Wood Machine Co.
Simonds Saw & Steel Co.
Taylor Stiles & Co.
Valley Iron Works Co.

**KNOTTERS**
Black-Clawson Co.
Improved Paper Machinery Corp.

**LABORATORY CORRUGATOR**
The Noble & Wood Machine Co.
Thwing-Albert Instrument Co.

**LABORATORY EQUIPMENT**
Appleton Machine Co.
Bauer Brothers Co.
Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
Egan, Frank W., & Co.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.
Williams Apparatus Co., Inc.

**LAMINATING MACHINES**
The Bagley & Sewall Company
Dilts Machine Works
Egan, Frank W., & Co.
Rice Barton Corporation
John Waldron Corp.

**LAY BOYS**
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

**LINTER COTTON**
Hercules Powder Co., Inc.
Railway Supply & Mfg. Co.

**LINTER PULP**
Hercules Powder Co., Inc.

**LUBRICANTS**
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

**MAGAZINE REELS**
Dilts Machine Works (Kohler Systems)

**MATERIALS HANDLING**
Dilts Machine Works
Jeffrey Mfg. Co.
Shartle Bros. Mch. Co.
The Wellman Engrg. Co.

**MICROMETERS & CALIPERS**
Farrel-Birmingham Co.
Lobdell Co.
Testing Machines, Inc.

**MICRO-CRYSTALLINE WAXES**
Bareco Oil Co.
Sun Oil Company

**MOISTURE CONTENT CONTROL**
Cambridge Instrument Co.
Williams Apparatus Co., Inc.

**MOTORS AND GENERATORS**
Fairbanks, Morse & Co.
General Electric Company
Reliance Electric & Engrg. Co.
Westinghouse Electric Corp.

**NICKEL AND NICKEL ALLOYS**
The International Nickel Co.

**NOZZLES**
Spray Engrg. Co.

**PACKING BOXES**
Johnson Corporation
The Moore & White Co.
Shartle Brothers Machine Co.

**PAPER MACHINE DRIVES**
The Bagley & Sewall Company
Black-Clawson Co.
Manchester Machine Co.
Rice Barton Corporation
Westinghouse Electric Corp.

**PAPER MACHINES**
The Bagley & Sewall Company
Beloit Iron Works
Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Manchester Machine Co.
Moore & White Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

**PAPER MACHINES—LABORATORY**
The Noble & Wood Machine Co.

**PAPER MACHINE SLICES**
Black Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

**PAPER TUBE MACHINERY**
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.

**PARAFFINE WAXES**
Sun Oil Company

**PARAFFIN WAX EMULSIONS**
American Cyanamid Co., Ind. Chem. Div.
Hercules Powder Co., Inc.
Nopco Chemical Co.

**PASTING MACHINES**
Beloit Iron Works
Black Clawson Company
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.

Moore and White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

**PEBBLE MILLS**
F. L. Smidth & Co.

**pH METERS**
Cambridge Instrument Co.
Thwing-Albert Instrument Co.

**PIPE**
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Biggs Boiler Works Co.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
National Tube Co.
Walworth Company

**PIPE FITTINGS**
Armco Drainage & Metal Products, Inc.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
Walworth Co.

**PITCH CONTROL**
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

**PLASTICIZERS**
American Cyanamid Company, Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Rohm & Haas Co.

**PLATERS**
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

**PLATES**
Armco Steel Corp.
Babcock & Wilcox Co.
J. O. Ross Engrg. Corp.
Lukenweld Division
Lukens Steel Company
Timken Roller Bearing Co.

**PLUGS**
The Appleton Machine Co.
Black Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

**POPE TYPE REELS**
Black-Clawson Co.
Egan, Frank W., & Co.
Manchester Machine Co.
Rice Barton Corporation

**PRECISION SAMPLE CUTTER**
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**PRESERVATIVES**
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.

**PRESS ROLLS**
Beloit Iron Works
Black-Clawson Co.
Goodrich, B. F., Company, Inc.
Manchester Machine Co.
Rice Barton Corporation

**PRESSURE FILTERS**
Holyoke Machine Co.

**PRESSURE VESSELS**
Biggs Boiler Works Co.
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.

**PRESSES**
Black Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mch. Co.
Manchester Machine Co.
The Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

**PULLEYS**
Black-Clawson Co.
Dodge Mfg. Corp.
Rice Barton Corporation

**PULP CLASSIFIER**
The Bauer Bros. Co.
Thwing-Albert Instrument Co.

**PULP CLEANERS**
Bird Machine Co.
Nichols Engrg. & Research Corp.

**PULP STOCK VALVES**
Crane Company
Record Fdy. & Mach. Co.
Rice Barton Research Corp.
Shartle Brothers Machine Co.

**PULPERS**
Apmew, Inc.
Bauer Brothers Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Midwest Fulton Mch. Co.
Morden Machines Co.
The Noble & Wood Machine Co.
Rice Barton Research Corp.
Shartle Brothers Machine Co.

**PULPS**
Brown Company
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Lyddon & Co. (America), Inc.
Nordicus, Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Restigouche Co., Ltd.

**PULP SCREENS**
Bird Machine Co.
Trimbey Machine Works

**PULPSTONES**
Norton Company

**PULP TESTERS**
Williams Apparatus Co., Inc.

**PULVERIZING MILLS**
Combustion Engineering-Superheater, Inc.
Jeffrey Mfg. Co.
F. L. Smith & Co.

**PUMPS**
Apmew, Inc.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Buffalo Pumps, Inc.
Byron Jackson Co.
DeLaval Steam Turbine Co.
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Gibbs-Brower Company, Inc.
Johnson Corp.
Moore & White Co.
The Noble & Wood Machine Co.
Nash Engineering Co.
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

**RADIANT BURNERS**
Red-Ray Mfg. Co., Inc.

**RAG COOKING PROCESSES**
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

**RAG CUTTERS**
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

**RECOVERY SYSTEMS**
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

**REELS**
The Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Downingtown Mfg. Co.
Hudson-Sharp Mch. Co.
Manchester Machine Co.


*The Only...*

**FABRI-VALVE**

**FABRICATED ALLOY VALVES**

*Look for this Trade Mark* FABRI-VALVE

*Accept no substitute*

**THE VALVE THAT MEETS YOUR SPECIFIC NEED**

*Save* **ON ORIGINAL PRICE, INSTALLATION and SHIPPING COSTS**

FABRI-VALVES are complete weldments from rolled plate, thus eliminating any porous areas and insuring proper thicknesses where designed and are therefore superior to cast types.

Designed to control the flow of heavy paper stock and liquor solutions with a minimum of maintenance. Made from all types of stainless steel, monel or any combination. Contact nearest agent.

Sizes 2" to 24" in stock.
Special orders in 30 days.

**AGENTS:**

SOUTHERN CORPORATION, Charleston, S. C.
M. J. GIGY & ASSOCIATES, San Francisco, Cal.
JOHN B. ASTELL & CO., New York, N. Y.
NORTHWEST COPPER WORKS, Inc., Portland, Ore.
THOS. W. MacKAY & SON, Ltd., Vancouver, B. C.
CHANDLER BOYD CO., Pittsburgh 19, Penn.

**FABRI-VALVE CO. OF AMERICA**
2100 N. Albina Ave., Portland 12, Oregon

# NAT. PAPER TRADE ASSN.

# RECOMMENDS TEXTBOOK

S. O. Styles, Asst. Secretary writing about Wheelwright's *Practical Paper Technology* says:

**"We do feel that this book is a very useful and essential part of a paper man's library. Therefore from time to time we will place this in our *News Digest*."**

Written in non-technical language, this is a book which the paper salesman, the printer or converter, or others, interested in paper—its properties and uses will find helpful.

*Practical Paper Technology*, in durable paper cover, $2.25; Library Edition, cloth binding, copies, $3.00. Twenty-five cents extra for either edition for foreign delivery, Canada excepted.

**LOCKWOOD TRADE JOURNAL CO., INC.**

**15 West Forty-Seventh Street, New York 36**


Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.
Waldron, John, Corp.

**REFINERS**
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
The Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout Waldron & Co., Inc.
Sutherland Refiner Corp.
Valley Iron Works

**REGULATORS**
Apmew, Inc.
Bird Machine Company
General Electric Co.
Improved Paper Machinery Corp.
Johnson Corp.
Shartle Brothers Machine Co.
Taylor Instrument Companies
Trimbey Machine Works
Westinghouse Electric Corp.

**RESINS**
American Cyanamid Company, Plastics & Resins Division
The Dow Chemical Company
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Rohm & Haas Co., Resinous Products Div.

**ROLLS**
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
B. F. Goodrich Co.
Holyoke Machine Co.
Lindsay Wire Weaving Co.
Lobdell United Co.
Manchester Machine Co.
The Moore & White Co.
D. J. Murray Mfg. Co.
The Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Rice Barton Corporation
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John
Wheeler Roll Co.

**ROLL COVERS**
The Goodyear Tire & Rubber Company

**ROLL HANDLING EQUIPMENT**
Dilts Machine Works (Kohler Systems)

**ROLL STANDS**
Cameron Machine Co.
Dilts Machine Works (Kohler Systems)
Frank W. Egan & Co.
Johnstone Engrg. & Mch. Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.
H. G. Weber & Co., Inc.

**ROPE CARRIERS**
Black Clawson Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

**ROTARY KILNS**
Biggs Boiler Works Co.
F. L. Smidth & Co.

**ROTARY STEAM JOINTS**
Johnson Corp.
The Moore & White Co.
Rice Barton Corporation
Shartle Bros. Mch. Co.

**RUBBER LINING**
B. F. Goodrich Co.

**RUBBER PRODUCTS**
The Goodyear Tire & Rubber Company

**SATURANTS**
B. F. Goodrich Chemical Co.

**SATURATING MACHINES**
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

**SAVEALLS**
Bird Machine Company
Chicago Bridge & Iron Co.
Improved Paper Machinery Corp.

**SAWS**
Simonds Saw & Steel Co.

**SCALES**
Merrick Scale Mfg. Co.
Testing Machines, Inc.

**SCREEN PLATES**
Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.
Union Screen Plate Co.

**SCREENS**
Appleton Wire Works
Appleton Machine Company
The Bagley & Sewall Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Trimbey Machine Works
Valley Iron Works Co.

**SHAKE STICKS**
Westinghouse Electric Corp.

**SHEET MACHINES**
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hermann Mfg. Co.
Valley Iron Works Co.
Williams Apparatus Co., Inc.

**SHEET MACHINES—LABORATORY**
The Noble & Wood Machine Co.

**SHEETERS**
Jagenberg-Werke Akt. Ges.

**SHOWER PIPES**
Bird Machine Company
Black-Clawson Co.
Downingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

**SHREDDERS**
Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.
Jeffrey Mfg. Co.

**SIZE PRESSES**
Black-Clawson Co.
Manchester Machine Co.
Rice Barton Corporation

**SIZING**
American Bitumuls & Asphalt Co.
American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Glidden Company
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

**SIZING TESTER**
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

**SLIME CONTROL**
Buckman Laboratories of Canada, Ltd.
Buckman Laboratories, Inc.
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
Monsanto Chemical Co.
National Aluminate Corp.
Rohm & Haas Co.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

**SLITTERS**
The Bagley & Sewall Company
Black Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Clark-Aiken Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Dusenbery Co., Inc.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Graphic Arts International Corp.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson-Sharp Mch. Co.
Improved Paper Machinery Corp.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

**SMOKE STACKS**
Chicago Bridge & Iron Co.

**SOFTNESS-STIFFNESS TESTER**
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.

**SOLUBLE OILS**
American Cyanamid Company, Industrial Chemicals Division
General Dyestuffs Corp.
Nopco Chemical Co.

**SPECIAL MACHINERY**
Biggs Boiler Works Co.
Dilts Machine Works
Egan, Frank W., & Co.
Manchester Machine Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
John Waldron Corp.

**SPEED REDUCERS**
Dodge Mfg. Corp.

**SPLICING TISSUE**
Williams-Gray Co.

**STAINLESS STEEL**
Armco Steel Corp.
Michigan Steel Casting Co.
U. S. Steel Corp.

**STARCH**
Clinton Foods, Inc.
The Hubinger Co.
National Starch Products Inc.

**STEAM JOINTS**
The Moore & White Co.
Rice Barton Corporation
Shartle Bros. Mch. Co.

**STEAM SPECIALTIES**
Babcock & Wilcox Co.
Combustion Engrg. Co., Inc.
Johnson Corp.

**STEEL**
Armco Steel Corp.
Carnegie Illinois Steel Co.
Lukens Steel Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

**STEEL, CLAD**
Babcock & Wilcox Co.
Lukens Steel Company

**STEEL TANKS**
The Biggs Boiler Works Co.
Chicago Bridge & Iron Co.
The Sandy Hill Iron & Brass Works

**STRETCH TESTER**
Thwing-Albert Instrument Co.

**STUFF CHESTS**
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
Shartle Brothers Machine Co.
Valley Iron Works Co.

**SUCTION BOX COVERS**
Westinghouse Electric Corp.

**SUCTION BOXES**
Black Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Son Co.
Manchester Machine Co.
Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**SUCTION ROLLS**
Beloit Iron Works
Manchester Machine Co.

**SULPHUR**
Texas Gulf Sulphur Co.

**SULPHUR BURNERS**
Valley Iron Works Co.

**SULPHUR DIOXIDE**
American Cyanamid Company, Calco Chemical Div.
Virginia Smelting Co.

**SUPERCALENDERS**
The Appelton Machine Co.
B. F. Perkins & Son, Inc.

**SYNTHETIC LATICES**
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.

**SYNTHETIC RESINS**
American Cyanamid Co., Ind. Chem. Div.
Hercules Powder Co., Inc.
Rohm & Haas Co.

**TAKE OFF UNITS**
Dilts Machine Works (Kohler Systems)

**TALC**
American Cyanamid Company, Industrial Chemicals Division
Vanderbilt Co., R. T.

**TANKS**
Biggs Boiler Works Co.
Chicago Bridge & Iron Co.
Kalamazoo Tank & Silo Co.
The Noble & Wood Machine Co.
B. F. Perkins & Sons, Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

**TEARING TESTERS**
Thwing-Albert Instrument Co.
Testing Machines, Inc.

**TENSILE TESTERS**
Thwing-Albert Instrument Co.
B. F. Perkins & Son, Inc.
Scott Testers Inc.
Testing Machines, Inc.
A. van der Korput

**THICKENERS, DECKERS AND SAVEALLS**
The Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Chicago Bridge & Iron Co.
Dilts Machine Works
Downingtown Mfg. Co.
Improved Paper Machinery Corp.
Moore & White Co.
D. J. Murray Mfg. Co.
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

**TITANIUM**
American Cyanamid Co., Calco Chemical Div.
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.

**TOOLS**
Walworth Company

**TRACTORS AND TRUCKS**
Elwell Parker Elec. Co.
Towmotor Corp.

**TRANSMISSIONS**
Alexander Bros. Belting Co.
Dodge Mfg. Corp.
Jeffrey Mfg. Co.
Lovejoy Flexible Coupling Co.

**TRAPS**
Crane Co.
Johnson Corporation
Shartle Bros. Mch. Co.

**TUBE MILLS**
F. L. Smidth & Co.

**TUBES**
Babcock & Wilcox Co.
National Tube Co.

**TUBING MACHINES**
Dilts Machine Works

**TUBING, MECHANICAL**
National Tube Co.

**TUBS**
Biggs Boiler Works Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

**TURBINES**
De Laval Steam Turbine Co.
General Electric Company
Westinghouse Electric Corp.

**UNWINDERS**
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Rice Barton Corporation
John Waldron Corp.

**USED EQUIPMENT**
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Co.
Shartle Brothers Machine Co.

**V-BELTS**
Dodge Mfg. Corp.
Goodrich, B. F., Company, Inc.

**VALVES**
The Bagley & Sewall Company
Crane Company
DeZurick Shower Co.
Dilts Machine Works
Fabri Valve Co. of America
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
The Noble & Wood Machine Co.
William Powell Co.
Record Fdy. & Mch. Co.
Rice Barton Research Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Walworth Company

**VATS**
Biggs Boiler Works Co.
Black-Clawson Co.
Beloit Iron Works
Rice Barton Corporation

**WASHERS**
The Bagley & Sewall Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Improved Paper Machinery Corp.
E. D. Jones & Sons Co.
Moore & White Co.
The Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

**WASTE TREATING EQUIPMENT**
Hungerford & Terry, Inc.
Jeffrey Mfg. Co.

**WATER CONDITIONING**
Calgon, Inc.
General Dyestuff Corp.
Hungerford & Terry, Inc.
National Aluminate Corp.
The Permutit Company
The Sandy Hill Iron & Brass Works

**WATER DISPERSIONS**
American Cyanamid Company Industrial Chemicals Division
Naugatuck Chemical Division of U. S. Rubber Co.
Rohm & Haas Co., Resinous Products Div.

**WATER FILTERS**
Bird Machine Co.
Holyoke Machine Co.
Improved Paper Machinery Corp.

**WATER FINISH EQUIPMENT**
The Permutit Company

**WATER PENETRATION TESTER**
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

**WATER SOFTENERS**
Hungerford & Terry, Inc.
Wyandotte Chemicals Corp. Michigan Alkali Div.

**WATER VAPOR CUPS**
Thwing-Albert Instrument Co.

**WAXING MACHINERY**
Black Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

**WEB TENSION CONTROL**
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
John Waldron Corp.

**WELDING EQUIPMENT**
General Electric Company
Walworth Company
Westinghouse Electric Corp.

**WET MACHINES**
The Bagley & Sewall Company
Black Clawson Company
Carthage Machine Co.
Downingtown Mfg. Co.
Improved Paper Machinery Corp.
Moore & White Co.
The Noble & Wood Machine Co.
Pusey & Jones Company
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

**WET STRENGTHENING AGENTS**
American Cyanamid Co., Ind. Chem. Div.
Hercules Powder Co., Inc.
Plaskon Div. Libbey-Owns-Ford Glass Co.
Reichhold Chemicals, Inc.
Rohm & Haas Co.

**WETTING AGENTS**
American Cyanamid Company Industrial Chemicals Division
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Plaskon Division Libbey-Owens-Ford Glass Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp. Michigan Alkali Div.

**WHITE WATER TREATING EQUIPT.**
Bird Machine Co.
Hungertord & Terry, Inc.
The Sandy Hill Iron & Brass Works

**WINDERS & REWINDERS**
The Bagley & Sewall Company
Beloit Iron Works
The Appleton Machine Co.
Black Clawson Company
Kohler Systems
Cameron Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Dusenbery Co., Inc.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mch. Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.
Manchester Machine Co.
Moore & White Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Corp.
Smith & Winchester Mfg. Co.
Waldron Corp., John

**WINDING ROLL CHANGERS**
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Waldron, John, Corp.

**WIRE BRUSHES**
M. W. Jenkins Sons, Inc.
Williams-Gray Co.

**WIRE GUIDES**
Black-Clawson Co.
Gilbert & Nash

**WIRES**
Appleton Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Williams-Gray Co.

**WOOD SPLITTERS**
The Appleton Machine Co.
Carthage Machine Co.
Manchester Machine Co.

# INDEX TO ADVERTISERS


### A

Alan Wood Steel Co. ..... 45
Alexander Brothers ..... —
Amercat Corp. ..... 37
American Bitumuls & Asphalt Co. ..... —
American Cyanamid Co., Calco Chemicals Div. ..... —
American Cyanamid Co., Industrial Chemicals Div. ..... —
American Defibrator, Inc. ..... —
American Steel & Wire Co. .. —
Ansul Chemical Co. ..... —
Antara Chem. Div., General Dyestuff Corp. ..... —
Apmew, Inc. ..... —
Appleton Machine Co., The .... —
Appleton Wire Works, Inc. ... —
Appleton Woolen Mills ..... 38
APW Products Co. ..... 14
Armco Drainage & Metal Products ..... —
Armco Steel Corp. ..... —
Armstrong Machine Works ... —
Askania Regulator Co. ..... —
Asten-Hill Mfg. Co. ..... —

### B

Babcock & Wilcox Co. ..... —
Bagley & Sewall Co. ..... —
Bahr Bros. Mfg. Co. ..... —
Bailey Meter Co. ..... —
Bareco Oil Co. ..... —
Barrell, Wm. L., Co. ..... —
Bauer Bros. Co. ..... —
Beckman Instruments, Inc. .... —
Beloit Iron Works ..... —
Biggs Boiler Works Co. ..... —
Bird Machine Co. ..... 13
Birmingham Committee of 100 . 33
Bixby, R. W., Inc. ..... —
Black-Clawson Co. ..... 6
Blaw-Knox Co. ..... —
Bowsher, N. P., Co. ..... —
Brown Co. ..... —
Buffalo Pumps, Inc. ..... —
Byron Jackson Co. ..... —

### C

Calgon, Inc. ..... —
Cambridge Instrument Co. .... 34
Cameron Machine Co. ..... —
Carnegie-Illinois Steel Corp. ... —
Carthage Machine Corp. ..... —
Chemipulp Process, Inc. ..... —
Chicago Bridge & Iron Co. .... —
Ciba Company ..... —
Clark-Aiken Co. ..... —
Classified Advertising ..... 39
Clearing House ..... 39
Clinton Foods, Inc. ..... —
Columbia-Southern Chem. Corp. —
Combustion Engineering - Superheater, Inc. ..... —
Crane Co. ..... 10
Crucible Steel Corp. of America —

### D

Davis Co., Frank H. ..... —
Deitz Machine Works ..... —
De Laval Steam Turbine Co. .. —
Denver Equipment Co. ..... —
DeZurik Shower Co. ..... —
Diamond Alkali Co. ..... —
Dilts Machine Works ..... 6
Dodge Manfg. Co. ..... —
Dow Chemical Co. ..... 15
Downingtown Mfg. Co. ..... —
Draper Brothers Co. ..... —
du Pont, E. I., de Nemours & Co. Electrochemical Dept. ..... —
du Pont, E. I., de Nemours & Co. Dyestuffs Dept. ..... —
du Pont, E. I., de Nemours & Co. Grasselli Chem. Dept. ..... —
du Pont, E. I., de Nemours & Co. Polychemicals Dept. ..... —
Dusenbery Co., Inc. ..... —

### E

Ebasco Services, Inc. ..... —
Egan, Frank W., & Co. ..... —
Elixman Paper Core Co. ..... —
Elwell Parker Elec. Co. ..... —
English China Clays Sales Corp. 42

### F

Fabri Valve of America ..... 47
Farrell-Birmingham Co., Inc. .. —
Ferguson, The H. K., Co. .... —
Fiber Glass Div., Libbey-Owens-Ford Glass Co. ..... 8
Fitchburg Screen Plate Co. .... —

### G

Geigy Co. ..... 46
General Dyestuff ..... —
General Electric Co. ..... —
Gibbs-Brower Co. ..... 41
Gilbert & Nash Co. ..... —
Glidden Co. ..... 43
Goldman, G. B., Paper Co. .... —
Goodrich Chemical Co. ..... —
Goodrich Co., B. F. ..... —
Goodyear Tire & Rubber Co. .. —
Goslin-Birmingham Mfg. Co. Front Cover
Gottesman & Co. ..... —
Graphic Arts Int. Corp. ..... —
Graton & Knight Co. ..... —
Grinnell Co., Inc. ..... —
Gruendler Crusher & Pulverizer Co. ..... —
Gurley, W. & L. E. ..... —

### H

Hamblet Machine Co. ..... —
Hamersley Mfg. Co. ..... —
Hardinge Co., Inc. ..... —
Heinrich, H. H., Co. ..... —
Hercules Powder Co. ..... —
Hermann Manfg. Co. ..... —
Heyden Chemical Co. ..... —
Holyoke Machine Co. ..... —
Hooker Electrochemical Co. ... —
Huber, J. M., Corp. ..... —
Hubinger Co., The ..... —
Hudson-Sharp Machine Co. ... —
Hungerford & Terry, Inc. ..... —
Huyck, F. C., & Sons ..... —
Hydro-Silica Corp. ..... —

### I

Improved Paper Machy. Corp. . —
International Business Machines Corp. ..... 36
International Nickel Co. ..... —
International Wire Works .... —

### J

Jackson & Church Co. ..... —
Jagensberg-Werke Akt. Ges. .. —
Jeffrey Mfg. Co. ..... —
Jenkins, M. W., Sons, Inc. ... —
Johnson Corp., The ..... —
Johnson, Alvin H., & Co. ..... —
Jones, E. D., & Sons Co. ..... —

### K

Kalamazoo Tank & Silo Co. ... —
Kinsley Chemical Co. ..... 46
Knox Woolen Co. ..... —
Koppers Co., Inc. ..... —

### L

Langston, Samuel M., Co. ..... 51
Libbey-Owens-Ford Glass Co. .. 8
Lindsay Wire Weaving Co. .... —
Lockport Felt Co. ..... —
Lodding Engineering Co. ..... 2
Lukens Steel Co. ..... —
Lyddon Co. ..... —
Lynch Corp. ..... —

### M

Magnuson Products Co. ..... —
Magnus Metal Div., Nat. Lead Co. ..... —
Main, Charles T., Inc. ..... 38
Manchester Machine Co. ..... —
Manheim Mfg. & Belting Co. .. —
Mead Sales Co., The ..... 17
Meincke, A. M., & Son ..... 34
Meisel Press Mfg. Co. ..... —
Mercer Paper Tube Co. ..... 32
Merrick Scale Co. ..... —
Michigan Steel Casting Co. .... 38
Midwest Fulton Machine Co. .. —
Minneapolis-Honeywell Regulator Co. ..... —
Mixing Equipment Co. ..... —
Monsanto Chemical Co. ..... —
Moore & White Co. ..... —
Moorhead Electrical Machinery —
Modren Machines Co. ..... —
Morey Paper Mill Supply Co. . Co. ..... —
Morningstar, Nicol, Inc. ..... —
Mount Hope Machinery Co. ... —
Murray, D. J., Mfg. Co. ..... —

### N

Nash Engineering Co. ..... 31
National Aluminate Corp. ..... 3
National Aniline Div., Allied Chem. & Dye Corp. ..... —
National Starch Products, Inc. . —
National Tube Co. ..... —
Naugatuck Chem. Div., U. S. Rubber Co. ..... —
Niagara Alkali Co. ..... 25
Nichols Engrg. & Research Co. —
Noble & Wood Machine Co. ... 34
Nopco Chemical Co. ..... —
Nordicus, Inc. ..... 32
Norton Co. ..... —

### O

O'Donoghue, Roderick ..... —
Oldbury Electro Chemical Co. . —

### P

Pandia, Inc. ..... —
Parsons & Whittemore ..... —
Pennsylvania Salt Mfg. Co. ... —
Perkins, B. F., & Sons Co. ... —
Perkins Goodwin Co. ..... —
Petroleum Specialties Co. ..... —
Pioneer Paper Stock Co. ..... —
Pittsburgh Piping & Equip. Co. —
Plaskon Div., Libbey-Owens-Ford —
Poirier Control Co. ..... —
Potdevin Machine Co. ..... —
Powell, William, Co. ..... —
Price & Pierce, Ltd. ..... 44
Pulp & Paper Trading Co. .... —
Pusey & Jones Corp., The ..... —

### R

Railway Supply & Mfg. Co. .. —
Raymond, Chas. P., Service, Inc. 39
Reading Crane & Hoist Co. .... —
Record Fdy. & Machine Co. ... —
Red Ray Manufacturing Co., Inc. ..... —
Reichhold Chemicals, Inc. ..... —
Reliance Elec. & Engrg. Co. .. —
Research Corp. ..... —
Restigouche Co., Ltd. ..... —
Rice Barton Corp. ..... —
Rogers, S. C., & Co. ..... —
Rohm & Haas Co. ..... —
Roosevelt Paper Co. ..... —
Roots-Connersville Blower Div. —
Ross, J. J., Co. ..... —
Ross, J. O., Engrg. Co. ..... —
Ross Paper Machinery Co. .... 40
Rust Engineering Co. ..... —

### S

Sandusky Fdy. & Mch. Co. ... —
Sandy Hill Iron & Brass Works —
Seaboard Air Line R.R. Co. .. —
Shartle Bros. Machine Co. .... 6
Shuler & Benninghofen ..... —
Simonds Saw & Steel Co. ..... —
Sinclair Refining Co. ..... —
Sirrine, J. E., Co. ..... —
SKF Industries ..... —
Smidth, F. L., & Co. ..... —
Smith & Winchester Mfg. Co. . —
Socony Vacuum Oil Co., Inc. .. —
Sonoco Products Co. ..... —
Spray Engineering Co. ..... —
Sun Oil Co. ..... —
Sutherland Refiner Corp. ..... —
Swenson Evaporator Co. ..... —

### T

Taylor Instrument Cos. ..... —
Taylor Stiles & Co. ..... —
Tennessee Coal, Iron & R. R. Co. ..... —
Testing Machines, Inc. ..... —
Texas Co., The ..... —
Texas Gulf Sulphur Co. ..... —
Thiele Kaolin Co. ..... —
Thomas Paper Stock Co. ..... 42
Thwing-Albert Instrument Co. . —
Tide Water Assoc. Oil Co. ... 4
Timken Roller Bearing Co. Back Cover
Titanium Pigment Corp. ..... 23
Torrington Co., Inc. ..... —
Towmotor Corp. ..... —
Tracerlab, Inc. ..... —

### U

Union Screen Plate Co. ..... —
United Carbon Co., Inc. ..... —
United States Steel Export Co. —
United States Steel Supply Co. —
U. S. Rubber Co. ..... —
U. S. Steel Co. ..... —

### V

Valley Iron Works Co. ..... —
Vanderbilt, R. T., Co. ..... —
Van der Korput, A. ..... 46
Virginia Smelting Co. ..... —

### W

Waldron, John, Corp. ..... —
Walworth Co. ..... —
Waterbury Felt Co. ..... —
Weber, H. G., & Co., Inc. .... —
Wellman Engineering Co. ..... —
West Disinfecting Co. ..... —
Western Precipitation Corp. .. —
Westinghouse Electric Corp. ... —
West Virginia Pulp & Paper Co. 44
Weyerhaeuser Timber Co. .... —
Wheeler Roll Co. ..... —
Whiting Corp. ..... —
Williams Apparatus Co. ..... —
Williams Gray Co. ..... —
Wisconsin Wire Works ..... —
Wyandotte Chemicals Corp. ... —



**BUSINESS STAFF**

**Arthur E. Gordon**, Business Mgr. — **Frederick B. Grosse**, Production Mgr.

**Bruce E. Brown**
15 West 47th Street, New York 36, N. Y. Plaza 7-2370

**George Heitzeberg**
15 West 47th Street, New York 36, N. Y. Plaza 7-2370

**H. K. Vinton**
CHICAGO, 3, ILL.: Room 1020, 79 West Monroe St. CEntral 6-2784

**H. L. Poulton**
PITTSBURGH, 11, PA.: 610 Pennridge Road. Hemlock 1-1571

**McDonald-Thompson Company**
LOS ANGELES, 5, CAL.: 3727 West Sixth Street. DUnkirk 7-5391
SAN FRANCISCO, CAL.: 625 Market St. YUkon 6-0647
SEATTLE, 1, WASH.: Terminal Sales Bldg. MAin 3860.
PORTLAND, 4, ORE.: 115 SW Fourth Ave. ATwater 7401
DENVER, 2, COLO.: 222 Colorado Nat'l. Bank Bldg. MA 2733

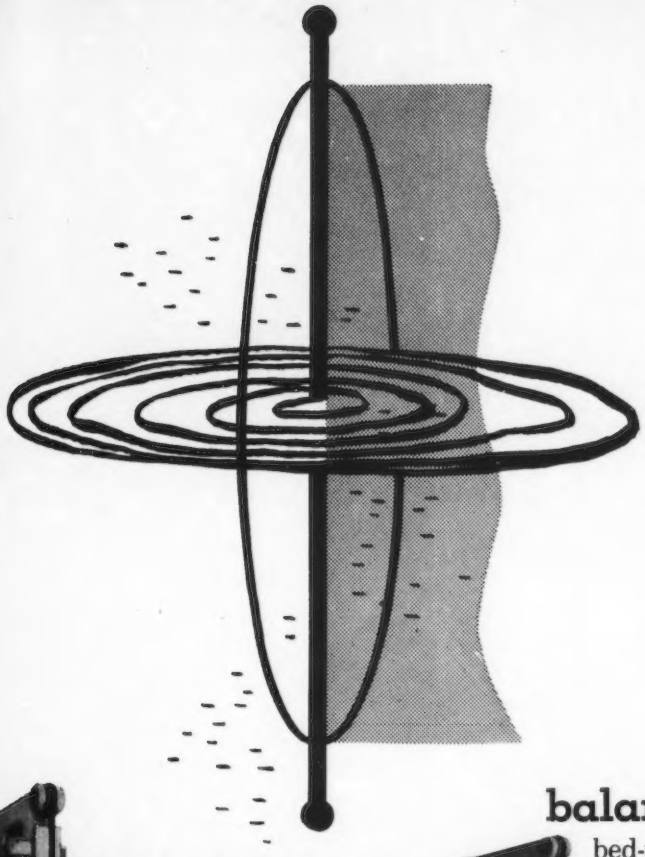
**Edward M. Buck, Inc.**
DALLAS, 5, TEXAS: 205 Irwin-Keasler Bldg., Riverside 4042
ATLANTA, 3, GA.: 5 Ivy Bldg., N.E. LAmar 4719

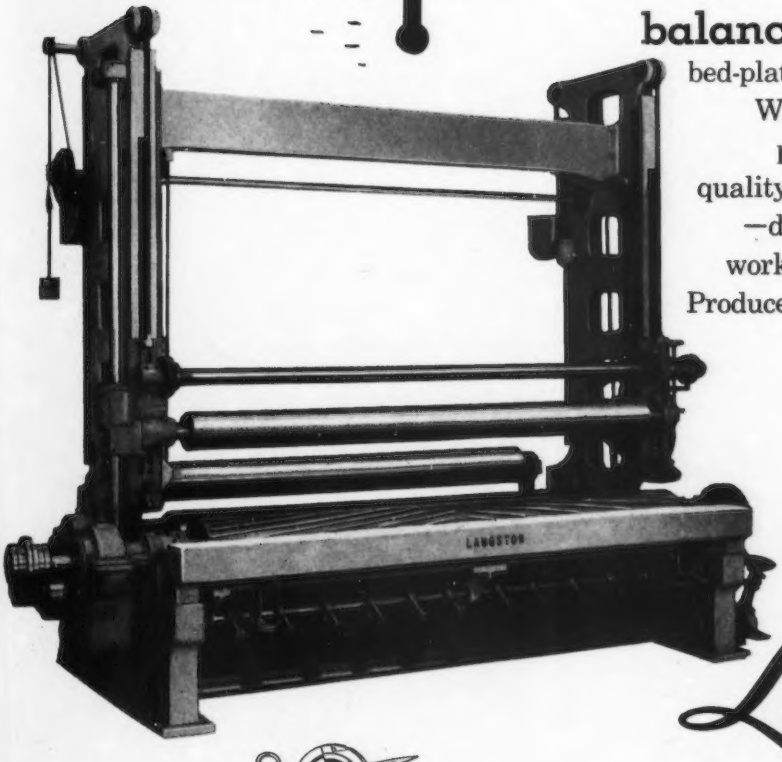


While we strive for accuracy in preparing the above index, which is purely a service to our readers, we cannot be responsible for errors.



HUGHES PRINTING CO.
EAST STROUDSBURG, PA.






**balance** Substantially built from bed-plate up, Langston Slitters and Winders provide the balanced power that produces highest quality rolls. Shown is Type "DA" —designed for very heavy duty work in widths from 92″ and up. Produces top quality rolls at speeds up to 3500 feet per minute.

SHEAR CUT CLEAN CUT

**SAMUEL M. LANGSTON COMPANY**
**CAMDEN, N. J.**

*Langston*
**slitters and winders**

# New Unifiner has adjustable head for greater capacity, TIMKEN® bearings for greater plug accuracy

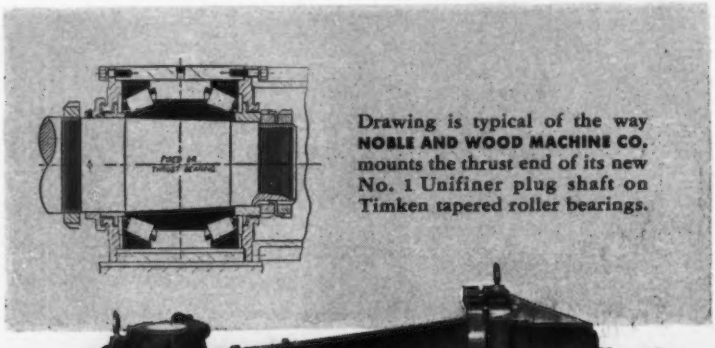
DUE to its adjustable head, this new No. 1 Noble and Wood Machine Co. Unifiner can process up to 25 tons of kraft pulp a day—even though its plug is only 22″ in diameter and 35½″ long. And due to the Timken® tapered roller bearings on the plug shaft, accurate spacing is maintained between plug and shell—uniform pulp disintegration assured.

Because Timken bearings are tapered, they carry the terrific thrust loads of the plug, as well as the radial loads. Line contact between rollers and races provides capacity to spare in a small space resulting in a more compact design. The plug is centered accurately in the shell, knife breakage is reduced.

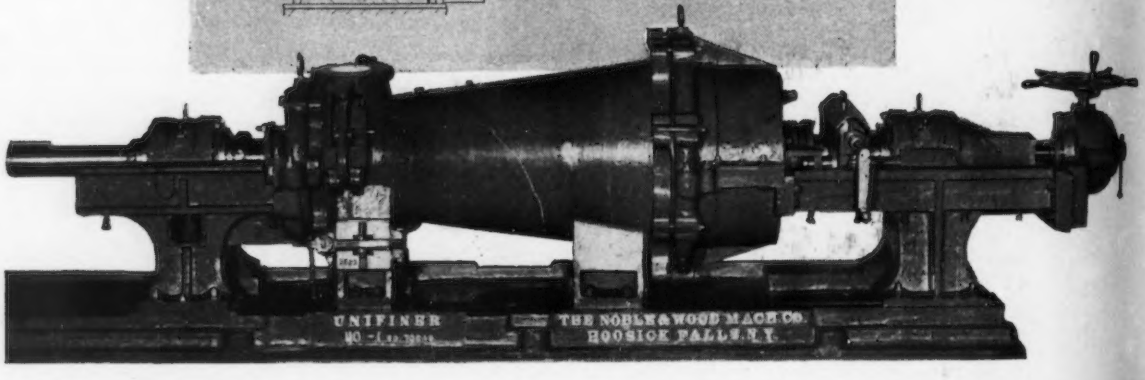
Timken bearings have true rolling motion and an incredibly smooth surface finish. They reduce friction, reduce wear. Because they hold shafts and housings concentric, closures are more effective. Lubricant stays in—dirt and moisture stay out. Lubrication and maintenance costs are reduced.

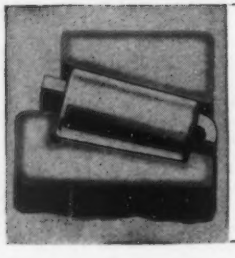
Specify Timken bearings for the pulp and paper machinery you build or buy. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

*This symbol on a product means its bearings are the best.*



Drawing is typical of the way **NOBLE AND WOOD MACHINE CO.** mounts the thrust end of its new No. 1 Unifiner plug shaft on Timken tapered roller bearings.



**GREATER LOAD AREA**

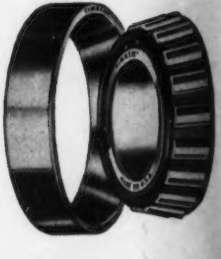
Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

**TIMKEN**

TRADE-MARK REG. U. S. PAT. OFF.

***TAPERED ROLLER BEARINGS***



**NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▱ BEARING TAKES RADIAL ↕ AND THRUST →←↕ LOADS OR ANY COMBINATION ✳**